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Original Articles.

THE PATHOGENESIS OF UREMIA AND ECLAMPSIA.*

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Under a rather hackneyed title, it is my purpose to discuss very briefly a subject that will always be of interest until the mystery which surrounds the direct causal influences of uremia and eclampsia is entirely and finally dispelled.

None of the theories offered up to the present time has been thoroughly satisfactory in explaining either the uremic state, which seems to be associated always with renal insufficiency, or that of eclampsia, which may or may not be preceded by signs of renal disability, but presents an almost identical clinical picture. I think it fair to state that I have never seen a case of eclampsia in which the urine, drawn by catheter during the coma or the convulsive period, failed to give abundant evidence of a serious renal involvement. I have seen this statement borne out in cases in which there was neither a trace of albumin nor a single form of renal sediment distinguishable by the microscope prior to the onset of the convulsive seizure.

Often the renal insufficiency proved to be temporary, but the regularity with which it has occurred has led me to believe more strongly with each new case that uremia and eclampsia are identical states, brought about in similar ways, though under many widely variant conditions. This does not mean (and I would emphasize the point) that they are necessarily the result of kidney disease. It may be that even constipation, or an abnormal condition of the thyroid gland or of the placenta, may in certain instances influence the particular case more forcibly than the impairment or integrity of the renal function.

It is not my object, however, to discuss the similarity of uremia and eclampsia, but to suggest a coincidence of two causes for both conditions which have been brought forward separately by more than one writer and studied by very many.

The first of these is the action of a toxin or of toxins on what Landois calls the psychomotor centers of the brain, while the second is a mechanical pressure on the same cortical centers, acting either in combination with the toxin, or occasionally alone, but not in the manner held by Traube, viz., an effusion into the ventricles and consequent anemia of the brain.

That toxins, and even certain substances which can hardly be placed in this category, may produce by their local action the complete symptom-complex of uremia, including coma or convulsions, followed by death or recovery, has been shown beyond a peradventure by the exhaustive research of Landois.[1] Weisenberg's[2] recent report of extensive chromatolysis of the Betz cells of the paracentral lobule, especially on the side opposite the paralysis, in two cases of uremic hemiplegia, is another indication of the presence and action of a poison destructive to the central nervous system. The cells in the anterior horns of the cord, also in the medulla, and in the cerebellum, were found to show positive alteration, as well as the fibers of one motor tract. The extensive lesion in the posterior portion of the left hemisphere of Case 3 of the series cited in this paper was more than possibly a gross destructive process of the same nature. Among many clinical evidences is the form of amaurosis which can occur in both uremia and eclampsia in the absence of any evident antemortem or postmortem lesion of the nerve. It has been shown that even the injection of large quantities of common salt solution into the blood may produce the symptoms of uremia.

I have found it equally true that many of the symptoms noted in both uremia and eclampsia resemble pressure symptoms, and can be controlled at once by relieving pressure on the central nervous system. I am led to believe, therefore, that while the toxin theory may provide a partial explanation of the uremic state, there is at times, or perhaps always, another important influence at work in the form of intracranial and probably localized pressure on the psychomotor centers. Among the symptoms that may be ascribed to intracranial pressure are the following, all familiar to the student of uremia and eclampsia alike: Headache (sometimes unilateral), sleepiness, dizziness, nausea and vomiting, neuralgias, tinnitus aurium, coma, convulsions, cyanosis, paresis, paralysis (sometimes hemiplegia), aphasia, loss of control of bladder and intestines, and, most sudden and startling of all, amaurosis.

The following three cases, briefly cited, illustrate partially the "pressure theory" and the results of therapeusis based on the same:

CASE 1.—M. R., a woman of 50 years, was admitted to the Philadelphia Hospital in March, 1904.

Symptoms.—Her feet and legs were edematous, her breath was urinous, control of the sphincters was lost and the patient was semicomatose. The temperature was 97 F. The urine contained 3.2 grams of albumin per liter, and many hyaline and hyalogranular casts. Two days later the temperature rose to 103, the breathing became very labored, and death seemed imminent.

Treatment.—Lumbar puncture was performed, and nearly 12 c.c. of colorless, clear fluid withdrawn from the spinal canal.

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1. Uremia, 1891, second edition.
2. Proceedings Path. Soc. Philadelphia, February, 1904.

The respirations at once became easy, the pulse fell from 110 to 84, and, although the patient was past all help when the puncture was performed, the cerebral relief was evident during the last two hours of her life.

Examination of Fluid.—The spinal fluid was examined by Dr. Rosenberger and was found sterile. Small quantities were injected into guinea-pigs, intraperitoneally, but with no untoward result.

CASE 2.—R. B., a man, about 40 years of age. His mother died of nephritis. The patient had syphilis fifteen years before. Seemed fairly well until two weeks before admission to the Philadelphia Hospital in April last.

Symptoms.—He was then dyspneic and had extensive edema of the feet and legs, and to a lesser degree of the entire body. Just after entering the ward he developed a pulmonary congestion, expectorated traces of blood, etc., and became very dyspneic. This condition decidedly improved during the following two days, in spite of a double valvular cardiac lesion (mitral and aortic). He began to complain of severe headaches, and then gradually developed a uremic condition. At times he was comatose, and again so delirious as to require restraint in bed. The breath was urinous, the feces were at times involuntary, the reflexes almost disappeared, the pupils contracted, and Cheyne-Stokes breathing made its appearance. The urine contained large quantities of albumin and numerous pale granular and hyalogranular casts.

Treatment.—Lumbar puncture was performed. Prior to performing the operation the pulse was 90 and the respiratory rate 33. Fifteen cubic centimeters of clear fluid were drawn, and three hours later the pulse was 50 and the respirations 23.

Result.—Immediately following the puncture the patient began to breathe quietly and more regularly, and a peaceful sleep ensued. The opening into the spinal canal, though covered with compresses, continued to drain and at such a rate as to wet the bedclothes for more than two days. During this time there was a decided general improvement, the patient being conscious and fairly comfortable. He then went into delirium and died during the ensuing night.

Autopsy.—The autopsy in this case showed aortic and mitral insufficiency, atelectasis of the lower left lobe, subacute parenchymatous nephritis and red atrophy of the liver.

The spinal fluid was cultured, and, like that of Case 1, proved sterile. Injections were also made into guinea-pigs, but proved innocuous.

CASE 3.—B. P., a colored clergyman, aged 50. His father died of a malignant tumor. His own early history was negative until two years ago, when he had a "slight stroke of paralysis" (probably a uremic seizure) in the right arm and leg. He was in the hospital three weeks, and then was discharged with the free use of his right side. He had recently had headaches for two months, especially severe during the last week. Eighteen hours prior to admission there was severe vomiting, followed by unconsciousness, from which he could not be aroused.

Symptoms.—On admission he was unconscious, his breathing stertorous, the pupils slightly dilated (later contracted); the pulse rapid and of high tension, his temporal arteries resembling fibrous cords both as the result of sclerotic change and of the tension. The second cardiac sound was loud and metallic, the legs slightly edematous, the breath urinous. He was restless and swallowed fluids with difficulty. The catheter obtained six ounces of pale urine which contained large quantities of albumin, no sugar, many hyalin and hyalogranular casts. There was also incontinence of urine. The respirations assumed the Cheyne-Stokes rhythm soon after admission to the ward.

Treatment.—The patient on admission received two hot packs, following which all his symptoms were more pronounced. He was thoroughly purged from the start, was bled twice, and received one high enema of magnesium sulphate solution. During his last thirty-six hours his skin was bathed in a profuse perspiration. Nitroglycerin was administered hypodermically during the last twenty-four hours. In short, every reasonable treatment was resorted to except the use of aconite, which I would certainly employ in another similar case. Lumbar puncture was performed the following morning. The spinal fluid at first spurted out, instead of dropping, as is usually the case. It was clear and soon began to drop, continuing to do so for over an hour. About 25 cubic centimeters were withdrawn. Before the fluid had ceased to flow the Cheyne-Stokes respirations had been replaced by slow, full breathing; the patient was quiet, and on replacing him on his back his attention could easily be attracted by the voice or by the finger moving before his eyes.

The wound in the tissues was allowed to bleed profusely in the hope of further reducing the vascular and systemic tension, and a pint of blood, approximately, was withdrawn in this way.

On the following morning his condition was fairly good, though coma had again set in. Lumbar puncture was again performed, and on this occasion only 10 c.c. dropped slowly into the tube. The same result was noted, however, and following the procedure the patient was partially out of his coma, and the pulse, temperature and respirations soon began to fall. Prior to the puncture he lay stupid, with the left eyelid ptosed, evidently paretic, and with the right eye wide open, but unresponsive to the finger touching the cornea. Following the withdrawal of the fluid both eyelids opened wide and the eyeballs followed the finger. On the third morning the coma was as deep as at any time. Even less fluid was obtained by the third puncture (less than 10 c.c.); it contained blood and dropped with great slowness. There was an even more decided fall of temperature and of the respiratory rate, but the pulse rapidly rose, and the patient died at 9 p. m. on the same evening.

Autopsy.—The autopsy showed a most interesting state of affairs. The heart was of the cor bovis type, the wall of the left ventricle measuring 4 cm. in diameter and that of the right ventricle 2 cm. The coronary arteries were sclerosed and lined with yellow patches of atheromatous change. The kidneys showed an extensive chronic diffuse inflammation, the cortex being greatly reduced, and the parenchyma showing many small cicatrices due to fibrous change. The brain was of normal size and presented a large degenerative cyst, mainly of the parietal lobe, but also including a portion both of the temporosphenoidal and occipital lobes, entirely posterior to the fissure of Rolando. The cyst contained a considerable quantity of serous fluid, together with a small clot of dark red blood. The cyst cavity communicated with the posterior horn of the left lateral ventricle, though whether as the result of trauma to the friable and degenerated tissues, sustained in removing the brain, or whether it existed *in vitro*, can not accurately be determined. The right lateral ventricle was also greatly dilated, especially the posterior horn, which contained, when opened, considerable serous fluid. The arteries of the base were brittle and remained gaping and open when incised. This was also a feature of the renal arteries, including the smaller branches within the organ.

From my experience in the foregoing cases, I am, as already stated, compelled to pause before accepting Landois' well-known statement that "uremia is the result of the toxic influence of certain substances on the brain," as a complete and satisfactory explanation for the uremic and eclamptic states. This reluctance extends equally to the theories under favorable consideration at the present time, as, for instance, that of Novi dependent on concentration of the blood and cerebral anemia, and that based on the experiments of Weighard with syncytiolysins, and the still more recent and fascinating idea that impairment of the thyroid functions is at the bottom of the eclamptic condition. Any one or all of these conditions may have something to do with the complete and typical picture presented in the uremic state. In fact, I suspect that in certain instances more than one may play a part. Certainly, however, we must reckon with another factor, namely, intracranial pressure, and it may be that further study will show that

this is the most potent of all. In favor of this view we have first, the immediate, although temporary, alleviation of symptoms in each of the three cases reported in this paper, and a less prompt but similar (and permanent) betterment in cases reported by other observers.[3]

In Cases 1 and 2 the improvement could be ascribed to relief from some form of fluid pressure only. Case 3, while more interesting because of the complicating cyst, presents a doubt as to whether the relief was one from local pressure on the psychomotor centers only, or from that pressure exerted by the fluid contained in the cyst cavity. If the cyst did indeed communicate with the left lateral ventricle, as was probably true, the effect of spinal drainage was a double one, and lowered the general and local intracranial pressure at the same time. The previous hemiplegia, so evidently uremic, renders the nature of the second attack more plain than it would otherwise be, even in a subject with so evident a renal disability.

Among the symptoms from which relief was afforded, presumably by the flow of cerebrospinal fluid, were in Case 1 the rapid pulse, the labored respirations and the restlessness; the delirium, coma and dyspnea in Case 2; the coma, ptosis of the eyelid, temperature, pulse, respiratory rate and character (Cheyne-Stokes type) in Case 3.

So far back as 1850 R. B. Todd[4] cited a case showing a low delirium, then a paralysis of the arm and leg, coma, and death. At the postmortem examination there was found an effusion of lymph in the "arachnoid sac of the left side, covering the upper and inner surface of the hemisphere to the level of the base, but ceasing there abruptly so that not the smallest particle of lymph was found on the arachnoid of the base. An accumulation of fluid had taken place in a cavity, circumscribed by lymph, on the outer side of the left ventricle, near the position of the fissure of Sylvius. The fluid which had accumulated there compressed the brain on the left side, and formed a complete depression on its surface."

The autopsy findings in Case 3 differed from the foregoing only in the location of the fluid and the surrounding degeneration of the brain substance. There was in both cases the same form of intracranial pressure from fluid, the presence of which was most easily and naturally referable to the cause of the general condition. The only wonder must be that this pressure in Case 3 could be exerted so close to the motor centers, and yet spare the functions of the extremities and the musculature in general. Such cases prove, in any event, that serous fluid may be in excess, either locally or generally, in the cranial cavity, and by its presence may at least assist in causing the uremic picture. No reference is made in this statement, of course, to the serum frequently found between the convolutions in the brains of senile subjects. We know, further, that the uremic state occasionally presents complete paralysis of one portion, or even of the entire half of the body. Case 3 had already exhibited the hemiplegia, and during his last attack there was present a probable paresis of the oculomotor nerve.

In studying these suggestive series of facts, it would appear certain that in drawing the cerebrospinal fluid, with either prompt or delayed, but positive, relief from symptoms which we know may be caused by localized intracranial pressure, we relieve these symptoms by depleting the excess of fluid, whether contained in the ventricular cavities or in the brain tissue itself, or in spaces made by the fluid for its own accommodation. Gowers[5] has called attention to the fact that a dog becomes unconscious "when there is a pressure on the surface of the brain equal to a column of mercury 130 mm. high." Moreover, the autopsy frequently shows in cases of uremia and eclampsia an edema of the cerebral tissues. It is easily conceivable from a study of these cases that sometimes the edema may involve the cortex more seriously than other portions of the brain, or even one psychomotor center more positively than another, and thus produce aphasia, paresis or paralysis of the extremities, headache, coma or convulsions. A decrease in the intracranial fluid pressure resulting from the withdrawal of from 20 to 30 c.c. of cerebrospinal fluid, may relieve just such a localized edema and alleviate strictly local symptoms. The evacuation of the normal quantity of cerebrospinal fluid may have the same beneficial effect, when an abnormal quantity or some other cause of intracranial pressure is in evidence. We have seen an effusion form and reform after tapping, and can thus understand the early recurrence of pressure signs in hopeless cases of this nature.

The word hopeless leads me directly to the remark that we must again agree that intracranial pressure is not only the influence at work in the production of the uremic and eclamptic states. Otherwise a case that has been freely purged and still more freely bled, and from which all the obtainable cerebrospinal fluid has been withdrawn, should secure a permanent rather than a temporary relief from serious symptoms and death. The effect of toxic substances could not, of course, be done away with, even for a time, by lumbar puncture; none the less, symptoms due to pressure only should be more easily and lastingly amenable to treatment. In short, there are too many indications of a toxic influence on and in the system, such as the dry skin, the itching, the hypertension of the vessels, etc., and above all, the results of local applications of chemical substances to the psychomotor centers, as already quoted, for us to ignore the likelihood of a systemic and local intoxication. Thomson claims that at least one particular poison present resembles adrenalin in its action, constricting and increasing the tension in the vessels, and the result of clinical study would seem to bear out his belief. Landois has produced the complete picture of uremia, including coma and convulsions, by applying to the cerebral cortex creatin, creatinin, acid ammonium urate, leucin, sodium chlorid, etc. With the absorption of the substance the attacks grew slighter and slighter, and perfect recovery at times ensued.

Weighard also claims to have produced similar results by the injection of artificially prepared syncytiolysins in blood serum, and in his subjects he found postmortem typical lesions of uremia and eclampsia, anemic and hemorrhagic liver necroses, thromboses of the small vessels, and cloudy swelling of the renal epithelium. Novi has accomplished almost as much by the injection of a 10 per cent. solution of sodium chlorid, until the blood attained a concentration twice that of the normal.

It is interesting to note that in spite of these facts the injection of the cerebrospinal fluid from uremic subjects into small animals seems to have no deleterious effect.

CONCLUSIONS.

In conclusion, it may be said that we consider:

1. That it is probable there are at work in the

3. McVail: Brit. Med. Jour., 1903, et al.
4. Lumleian lecture, p. 42.
5. 1893, vol. II, p. 102.

cerebrum, as well as throughout the system of uremic subjects, at least one, and probably several toxic substances which exert their influence more or less locally on the cortex.

2. That it is equally certain that other portions of the brain than the cortex are also acted on, as in the production of coma, etc.

3. That no small part in the production of the uremic and eclamptic condition is played by intracranial pressure, due to a temporary excess of fluid, whether acting independently of or in conjunction with the toxic substances already mentioned.

4. That lumbar puncture will at least temporarily relieve certain of the symptoms most readily ascribed to localized intracranial pressure, and that in cases in which the pressure is the main factor, drainage of the spinal canal may save life. The procedure, together with free bleeding, purging and diuresis, should be added to our routine treatment of the condition.

5. That transfusion of normal salt solution by intravenous injection or hypodermoclysis, except in cases presenting anuria, or a greatly diminished urinary secretion, is contraindicated as tending to increase the liability to saturation of the tissues.

6. That the results of lumbar puncture in the three cases cited in this paper will not warrant the assumption that relief of intraspinal or intracranial pressure can alone be depended on to cure the uremic or eclamptic condition, provided the toxic influence is the prominent one in the particular case.

DISCUSSION.

DR. JAMES TYSON, Philadelphia—Dr. Willson's paper has given a fair presentation of this long-disputed subject. Pressure has long been held by some authorities to have an influence in the production of eclampsia, chiefly, however, on theoretical grounds. Dr. Willson has adduced some experimental evidence, of the value of which I am not prepared to judge without further study. I am not ready, however, to concede that there is not a toxic agent which plays a certain rôle in producing the phenomena of eclampsia. It has been a great many years since I prepared a paper to prove that puerperal eclampsia is due to a nephritis, the toxic products of which are responsible for the eclamptic symptoms. I think the same reasoning still holds at the present day. We must admit, too, that puerperal eclampsia, in very rare cases, may be a reflex phenomenon, just as convulsions in children may be a reflex event due to such irritation as teething, and the like. Convulsions thus caused usually occur in primipara after long and painful labors.

DR. ALEXANDER LAMBERT, New York City—Has any fatty degeneration of the liver been noted in these cases? In eclampsia the lesions are identical with those of acute yellow atrophy of the liver. In my experience and also the experience of the staff of the hospital, we have been struck with the fact of the apparent identity of the condition of the liver in uremia and in acute yellow atrophy. Even in the hyperemesis of pregnancy changes will appear in the urine with the development of leucin and tyrosin. There is no doubt that Dr. Willson clearly and carefully drew attention to the fact that the convulsive seizures were due to tension; but what is the cause of this intracranial tension? That is a question probably far behind that of toxemia. It is the same toxemia that kills in acute yellow atrophy. In eclampsia there are two types: that type with high tension, convulsive seizures predominating; the other type with a flat compressible pulse, and these patients die in spite of anything we may do for them. It is not uremic, but something back of the uremia. I have had experiences in which I have found acute yellow atrophy of the liver, and I think perhaps we have failed to recognize the frequency of the occurrence of that disease.

DR. ROBERT N. WILLSON—The subject is an interesting one, especially from the fact that many may hold that these patients would have had a better chance of recovery if the procedure had not been carried out. In each of my cases in which lumbar puncture was done the patient died; in each, however, there was an immediate and positive improvement for a time. Vail has reported three cases, all of which recovered, the only treatment being lumbar puncture and rest in bed. Seiffert has also reported successful cases. It therefore seems to me certain that in some cases the dominant influence is pressure due to toxic or other causes. Dr. Lambert has referred to the resemblance between the pathologic findings in eclamptic cases and in acute yellow atrophy. I think there is no question as to the accuracy of his statement. In short, there are cases overwhelmingly toxic, while others appear to be overwhelmingly due to pressure. In the latter lumbar puncture may be a means of saving life.

I will refer to another matter that is rather interesting. Dr. Riesman has called my attention to the fact that all of his fatal cases gave a bloody cerebrospinal fluid. It would appear that when the fluid is clear, the case is much more apt to recover. In one of my own cases the fluid was clear after the first two punctures, but bloody after the third. All of these patients died. Vail mentions the fact that the fluid from his favorable cases was clear. Whenever failure has been experienced in getting into the canal it was due to the use of too short a needle. I now use a four-inch small trochar and canula, applied through an incision in the skin and subcutaneous tissues. I have never failed to get within the canal if I kept close to the spinous process with the needle point.

AMEBIC DYSENTERY.

ITS LOCAL LESIONS AND TREATMENT.*

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Our views of dysentery have greatly altered since the days when we considered it "inflammation of the bowels" without knowing exactly what we meant by the term inflammation. These changes of views are the result of pathologic studies and are in line with the great changes made in our views of surgical etiology and pathology.

With regard to dysentery they began in the discovery by Losch of the ameba coli, and the association of this germ with the disease by Councilman and Lafleur; for a while after this the profession accepted that ameba coli, afterward called "*Amœba dysenteriæ*," as the established cause of the disease. In 1894 and 1895 the reports of Shiga, Flexner, Harris and others, seemed to establish the fact that at least in the epidemics of Japan and the Philippines the ameba was not always present, but there was a bacillus of a peculiar type universally present and to this they gave the name *Bacillus dysenteriæ* and established its etiologic relations to that form of the disease.

After this various efforts were made to establish the unity of dysenteries and to prove that this bacillus was the only cause; that the presence of amebæ in dysentery was accidental. Clinical observations, however, have failed to justify such sweeping conclusions. The best authorities have finally concluded that not only are there cases of pure bacillary dysentery and cases of pure amebic dysentery, but there are also cases at least with the typical symptoms of dysentery in which neither the bacillus nor the ameba can be found. We therefore recognize these three types: simple catarrhal dysentery, bacillic dysentery and amebic dysentery.

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It is to this last form of the disease that I wish to direct attention. What I have to say is based on personal experiences of seventy-four cases of amebic dysentery, together with what knowledge I may have gained from reading. In every case observed, with the exception of one, the diagnosis has been made on the finding of living motile *Amœbæ dysenteriæ* in the stools or scrapings. To some it has seemed a presumption to look on the amebæ as the cause of ulcers and dysentery, but the fact that they are present with other pathogenic agents in all cases, and the fact that the dysenteric symptoms and local lesions disappear only when the amebæ have been eradicated and recur when the amebæ reappear is positive proof, it seems to me, of their etiologic influence in this disease. I, therefore, assume that amebic dysentery has been proved and we may proceed to consider its cause, its symptoms, its local lesions and its treatment.

ETIOLOGY.

The cause of the disease is the infection or invasion of the colon by *Amœbæ dysenteriæ*. These amebæ consist of irregular oval masses of plasmodium, gelatinous in their appearance, scarcely visible when not moving, containing in their beds certain granular masses or vacuoles and appearing to be more or less refractile. They may be found in the mucus which is discharged in the stools, as well as in the scrapings from the ulcers in the rectum and sigmoid. Their source is unknown, nor is there any accepted theory with regard to it. The behavior of amebæ found in dysentery differs greatly from that of those found in fresh water, when exposed to heat or cold; it is this point alone that positively distinguishes the two. The latter remain motile at high and low degrees while the former are viable only at temperatures near that of the human body. Some have claimed that there was a difference in size, but my observation does not justify such an opinion, as the size of the amebæ varies greatly in different cases and even in the same case.

METHOD OF REPRODUCTION.

As to the method of production: It was formerly supposed that amebæ multiplied by biniary division, after the manner of leucocytes in the blood. According to Craig of the United States Army, Dofflein and others, it is now claimed this reproduction occurs through ovulation and sporulation; the spots in the amebæ which stain deep blue with Wright's solution represent spores, and those which stain very faintly the vacuoles from which spores have been discharged. There is one point in Craig's experiments in which an assumption is necessary, viz., that the bodies observed stained are the same as those observed in the living state before the staining, for it is impossible to stain and preserve the amebæ motile. In fact, one can hardly positively distinguish non-motile amebæ from other substances in the stools. If, however, this assumption is admitted, the method of reproduction by sporulation would seem fairly well established, and it is confirmed by the clinical experience of recurrences long after the motile amebæ have entirely disappeared from the stools.

TEMPERATURE AND OTHER CONDITIONS AFFECTING THE AMEBA.

The fact that we have been unable to isolate or obtain a pure culture of this ameba renders its study more difficult than that of ordinary pathogenic agents. Its behavior, however, under certain circumstances has been observed clinically, and from this we may formulate some of its characteristics. At the temperature of the body, or slightly higher, the life of the ameba is indefinite; if, however, the temperature of the vessel in which it is obtained gets below that of 70 degrees F., the motility and life of the ameba become extinct and no amount of heat will restore the same.

Bichlorid of mercury 1,-10,000, at the temperature of the body, checks the motility but does not destroy it except after very prolonged contact. Rogers states that a solution of quinin 1-1,000, at the temperature of the body, failed to destroy the amebæ after several hours' contact, but that a 1-500 solution stopped all movements in from five to fifteen minutes; when the amebæ were in the tissues, however, they were only destroyed by prolonged soaking in 1-500 or 1-100 solution of quinin. Saline solutions at the temperature of the body will not destroy the motility. According to Harris of Atlanta, peroxid of hydrogen is fatal to the germ. He does not state, however, whether this fluid was used cold or warm. Five per cent. of the 15 volume peroxid of hydrogen in water, however, does not seem to destroy the amebæ at a temperature of the body. Nitrate of silver in 1 per cent. solution checks the motility but does not seem to destroy the germ. All these solutions, however, when used at a temperature below 70 degrees, are fatal to the motility and life of the amebæ. In at least twelve of the cases which have been under my care the stools had been examined in vain for amebæ before they came to me. In every instance the failure to find the bodies has been due to the fact that the stools were examined after they had cooled off. In order to recognize the amebæ with any certainty the examination must be made while the stools are still warm and on warm slides. In my office these examinations are made from scrapings obtained from ulcers in the rectum and from the mucus collected on the rectal wall. These are placed at once on warm slides, put under a microscope and slightly heated now and then in order to maintain the temperature at about 98 degrees F. In the hospital or laboratory the stools are collected in warm pans, transferred immediately to the oven of the laboratory and kept there until an examination can be made at the temperature of the human body. These precautions are absolutely necessary to make an accurate diagnosis.

CHARACTERISTICS OF THE DISEASE.

Amebic dysentery is characterized by an insidious onset, variable but usually mild constitutional symptoms, frequent recurrences, extreme chronicity and latent existence. It may begin as an acute diarrhea, with blood and mucus in the stools and burning in the rectum, or it may come on as a simple looseness of the bowels, some of the stools being practically normal while others are thin and contain much mucus, with or without blood, and causing little or no pain. The acute cases are associated with burning in the rectum and frequent desire to defecate, loss of appetite, and slight elevation of temperature. The stools may be very frequent; the demand to defecate is imperative, but they are not associated with tormina nor excessive burning in the rectum. In most instances castor oil or salines, followed by moderate doses of opium and bismuth, control the disease for the time being. In two instances in the series of cases observed periods of quiescence lasting for six months in one and four months in the other have been observed. We must make some allowances with regard to the statements of these patients regarding these periods of absolute quiescence, for they are only periods of comparative activity of the amebæ. In a few instances the patients have actually become constipated during these periods, but such cases are exceptionally rare. In al-

most every instance the patients have reported periods of feeling greatly improved at times, but when we have carefully pinned them down to the facts these patients have considered themselves practically well when they were having two to four mucous stools a day without any pain.

LATENT DYSENTERY.

By latent dysentery we refer to the condition in which *Amœbæ dysenteriæ* are present in the intestine, without the diarrheal symptoms or the local manifestations in the form of rectal and sigmoidal ulcers. Rogers has established this fact, and I have myself observed four cases in which there was no diarrhea and yet there was amebic colitis with malaise, loss of flesh and strength and moderate temperature at night. One of these cases suffered from abscess of the liver, which recurred from time to time and which was operated on twice in five years. He could not recall ever having had a diarrhea. He was referred to me with the view of discovering some cause for these recurring abscesses of the liver in possible ulcers in the rectum and infection from these through the portal circulation. No ulcers were found in the rectum, but certain small cicatrices and some fetid mucus suggested a careful examination of the stools; these we found swarming with *Amœbæ dysenteriæ*. Two other cases with tenderness over the catput coli, loss of appetite and gradual decline in weight, mucous colitis but no diarrhea, have been observed, in each of which the stools contained *Amœbæ dysenteriæ* in abundance. In one of these cases amebic ulcers were found in the rectum, and in the other two small ulcers were observed in the sigmoid. The fact, therefore, that the patient does not have frequent, bloody, mucous stools does not prove that he is absolutely free from *Amœbæ dysenteriæ*. From cases recently observed, I am inclined to believe that no inconsiderable number of the sufferers from mucous colitis are the victims of amebic infection notwithstanding the absence of diarrhea.

GEOGRAPHICAL DISTRIBUTION OF THE DISEASE.

The locations in which amebic dysentery is likely to be found are worthy of consideration. Formerly the disease was called "tropical dysentery" under the false impression that it was only found in the tropical zones. While it is a fact that it is more frequently found in warm climates, yet it is well known that it may also occur in almost any climate. I have seen three cases of acute amebic dysentery in patients who have never been more than fifty miles south of New York and fifteen cases in which the patients have always resided above the thirty-seventh degree of latitude. The majority of the seventy-four cases observed, however, have contracted the disease in the Philippines, the West Indies and the extreme southern portions of the United States. The possibility of amebic dysentery can not, therefore, be eliminated on account of the patient's residence. The disease is nearly always sporadic even in the tropical zones, and may thus be distinguished clinically from bacillary dysentery, which is generally epidemic.

LOCAL LESIONS OF AMEBIC DYSENTERY.

The local lesions occurring in amebic dysentery differ in the acute and chronic forms. The disease is practically confined to the colon, although there are instances in which the small intestine has been involved for a short distance above the ileocecal valve. In some cases the disease begins in the rectum and travels upward, while in others it follows the reverse course. Rogers and Futcher state that the typical cases of infection begin in the caput coli and travel down. At all events the rectum and sigmoid flexure become involved sooner or later in almost every case. In the three acute cases observed the mucous membrane at the anus was pouting, bright red and swollen, the radial folds were edematous and painful; the walls of the rectum were in close apposition with each other, hot and tender to the touch, bright red in appearance and in one case there were several patches of pseudo-membrane. At this stage of the disease no actual ulcerations were observed, but later on these developed. These ulcers were irregularly oval in shape with gelatinous, yellowish, elevated centers, surrounded by bright red or purplish zones. They are usually superficial and heal rapidly under local treatment.

In the chronic form the ulcers begin as small red papules on the mucous membrane, rapidly becoming more and more prominent until a yellow spot develops in the center, due to the loss of epithelium, and this constitutes the center of the ulcer. I have frequently seen these in chronic cases of amebic dysentery, but did not observe them in either of the acute cases examined. The ulcers are usually situated on the summits of the mucous folds; a favorite site is on the folds of Houston. The size and shape of the ulcers vary greatly; some are small and irregularly oval, while others occupy almost the entire circumference of the gut. The long axis of the ulcer is usually at right angles with the long axis of the gut.

In very chronic cases the ulcers sometimes assume the form of little troughs cut out of mucous membrane with overhanging edges which resemble very much wormholes in wood. These trough-like ulcers sometimes cross one another, forming stellate ulcers. In this type of ulcer the base is hard and quite red and may extend through the muscular layer to the peritoneal layer, causing adhesions. The yellow gelatinous mass which forms the center of the ulcers is composed of submucosa infiltrated with *Amœbæ dysenteriæ*. Strange as it may seem, the amebæ are more abundantly found in the smaller ulcerations than in the large. In some cases large sloughs composed of detached shreds of mucous membrane are seen at the site of the ulcer or in the stools. Rogers has pointed out that these cases are generally associated with abscess of the liver which contain streptococci in addition to amebæ, thus showing a mixed infection. As pointed out by him, the odor in these cases is gangrenous and fetid, which is entirely unlike that found in amebic dysentery. One might here call attention to the peculiar odor of the stools in amebic dysentery, which is entirely different from that observed in other types of colitis. As the ulcers heal the yellow centers melt away, assume a grayish tint and gradually disappear, leaving a clean granular base more or less indurated; the small ulcers heal rapidly and all evidence of their having been present is lost; the larger ones, however, and the trough-shaped variety leave cicatrices which have been known to result in strictures of the gut.

DISTRIBUTION OF THE LESIONS.

While all writers agree with the general statement that amebic dysentery is practically confined to the colon, there is considerable difference between them in regard to the portion of this organ most frequently affected. Futcher and Rogers state that the cecum, appendix, hepatic flexure and ascending colon are the chief sites of the lesions. In 116 cases Futcher rarely, if ever, found the lesions in the rectum and sigmoid. These

statements are entirely at variance with my experience, as well as that of Strong, Leonard, Craig and others. In the seventy-four cases of amebic dysentery observed by me, typical ulcers of the rectum and sigmoid were found in seventy instances. In every case except one the character of the lesions was proved by the demonstration of living motile amebæ in the stools and scrapings from the ulcers. Futcher himself, although he claims that the chief seat of the disease is in the cecum, bases his diagnosis on the finding of *Amœbæ dysenteriæ* in scrapings from the rectal wall.

Why these experiences should differ it is impossible to say unless it be due to the fact that my observations have all been made, with one exception, on living subjects, while those of the authors quoted were made postmortem. The one patient who died while under my care from acute miliary tuberculosis showed dysenteric ulcers in the caput coli and in the ileum just above the ileocecal valve. It is possible, of course, that the other cases had ulcers so high up in the intestinal canal that it was impossible to observe them through the sigmoidoscope. In the majority of instances, however, the ulcers appeared to decrease in size and number from the rectum upward until they disappeared entirely in the upper portion of the sigmoid flexure, and as the patients entirely recovered under local treatment, it is reasonable to suppose that all the ulcers were reached. There is no doubt, therefore, in my mind that the rectum and sigmoid flexure are involved in a large percentage of chronic cases.

DIAGNOSIS.

The diagnosis of amebic dysentery rests on finding in the stools or in the scrapings, living motile *Amœbæ dysenteriæ*. Sometimes it requires several examinations before their presence can be established, but when once seen, in any considerable numbers along with the typical ulcers, the character of the disease is beyond doubt. This diagnosis will be more positive if the amebæ are observed in the scrapings from the ulcers, rather than in the stools, for it is known that *Amœba coli* may be present in the intestinal canals of perfectly healthy individuals. The simple presence, therefore, of one or two amebæ is not sufficient, without the ulcers and typical symptoms, to justify the diagnosis of true amebic dysentery.

COMPLICATIONS.

The complications of amebic dysentery are physical exhaustion, anemia, autointoxication, peritoneal adhesions and abscess of the liver. The first two are not uniformly present; patients may suffer from the disease for a long time without emaciation or any great loss of strength. Some cases, however, become rapidly emaciated; the hemoglobin is greatly reduced and they are practically bedridden early in the disease. In all instances the patients have a feeling of lassitude and are just a little below par in strength. The color is usually sodden rather than pale, and there is often the beetle flush on the cheeks which suggests the possibility of tuberculosis.

These conditions are due to the autointoxication and drain on the system brought about by the presence of amebic ulcers in the intestine. When the ulcers have healed and the intestine is restored to its normal conditions, these symptoms rapidly disappear.

Abscess of the liver is the one complication which commands our highest respect and demands the most rapid eradication of the amebæ. It is not my purpose to discuss here how these organisms reach the liver, whether through the portal circulation or across the peritoneal cavity; the fact remains that the large majority of cases of abscess of the liver are due to infection by *Amœba dysenteriæ*, and these have their habitat in the colon.

As Rogers states, no case of amebic abscess of the liver has ever been observed in which there were not present amebic ulcers in the colon. This fact justifies the statement that wherever the patient has symptoms of abscess of the liver or has suffered from it, he should be treated for amebic dysentery whether amebæ are found in the stools or not. The fact that they are not found at the time of examination does not prove that the spores are not buried in the submucosa, lying dormant and ready to reproduce the disease at any time.

TREATMENT.

The treatment of amebic dysentery is based on two facts which have already been mentioned, viz.: The disease is due to an infection of the colon by *Amœba dysenteriæ*, and the seat of the infection is in the crypts of the mucous membrane or in the submucosa. Whether the original infection is due to the burying of the amebæ themselves in these tissues or to the deposit of the spores it is impossible to state. From recent observations I am of the impression that the latter is more probable, but this is not important from a practical point of view. Our efforts should be directed toward getting rid of them and preventing their reproduction. In the beginning we may observe that there are usually no serious constitutional manifestations in this disease except when these are due to complications such as have been mentioned.

There is, therefore, no indication for serum therapy, as the disease is not in the blood and can not be reached through that channel. The whole treatment should be directed toward the local lesions, the destruction of the amebæ and the prevention of their development from the spores, and as these are buried in the tissues, it is evident that it will be impossible to destroy them by superficial washing or flushing of the intestinal canal, although this treatment is important and should be made use of to get rid of all the germs floating about in the colon. It is clear, however, that something should be employed by which the tissues may be penetrated and the germs or spores destroyed in order to completely eradicate the disease. While the remedies mentioned, bichlorid of mercury, nitrate of silver, saline solution, solutions of quinin, peroxid of hydrogen, etc., may be germicidal to the ameba when brought in direct contact with it, it is perfectly clear that none of these remedies will penetrate the submucosa.

This fact explains why so many cases treated by these remedies recur. The ideal treatment must, therefore, consist of some method by which these buried organisms can be reached and destroyed *in situ*. Early in our studies of *Amœba dysenteriæ* it was discovered that when the specimen stools on the slides on which they were being examined cooled off below a temperature of about 70 degrees F. the motility of the amebæ was lost and could not be restored; this fact suggested that if the temperature of the parts containing these organisms could be reduced considerably below this degree the amebæ could be destroyed and their infecting and reproductive powers would be eliminated. The application of cold to the intestinal mucous membrane through prolonged douches seemed to offer a solution of the question. At first such remedies as krameria, ichthyol, bichlorid of mercury and nitrate of silver were introduced into the cold douches, but one after another

was discarded, as it was found that simple cold water served every purpose in destroying the amebæ.

When the bowel is tolerant of hydrogen peroxid 5 to 10 per cent. of this remedy is introduced into the water on account of its beneficial effect to the ulcers and to combat any mixed infections that may happen to be present.

In some patients it is necessary to use a long rectal tube in order to get the fluid high up in the colon, but in the majority of cases the simple rectal tip of a fountain syringe is sufficient. The patient is placed in the knee-chest posture, the bag or fountain being elevated not more than three feet above the level of the hips and the fluid is allowed to run in slowly. The amount of water used is limited only by the tolerance of the patient. Some take only a small quantity at first, but they soon learn to take even two or three quarts. Some can retain the water for only a few minutes, while others retain it for three-quarters of an hour. In the former class it is necessary to repeat the injections two or three times at each sitting in order to obtain the desired effect. The treatment is always begun by the administration of a large dose of sulphate of magnesium, and this is repeated once or twice every week, according to the necessity of the case. The time consumed in ridding the bowel of the amebæ depends entirely on the tolerance of the intestine to cold water. In those cases in which large amounts of very cold water can be retained the organisms disappear in a very short time, while in those who can only retain small quantities for short periods several weeks are required.

In the chronic cases, where there is tenderness over the cecum and hepatic flexures, an icebag is applied over this region for two hours twice a day.

A metal or glass reservoir is better than a fountain syringe for the injections because these vessels can be filled with cracked ice and the water kept very cold. The best results have been obtained in these cases in which the temperature of the water used was below 45 degrees F.

Local ulcers of the rectum and sigmoid are treated by applications of antinosin, argyrol and other astringent and antiseptic substances. This local treatment is of the utmost importance and should never be neglected, as many of these ulcers are complicated by a mixed infection.

Internal medication is indicated where the digestion is impaired or where the patient needs stimulation on account of exhaustion. In three instances the disease has been seated so high up in the colon and the patients have been so intolerant of cold water that it was impossible to reach the affected region in this manner and it became necessary to resort to surgical means in order to eradicate the amebæ. In one instance the Gibson method of valvular colostomy was employed; in the other two the appendix was drawn up into the abdominal opening and sutured to the skin, after the method of Weir, until the peritoneal cavity had closed off; it was then amputated close to its base and there was thus left an opening through which a catheter could be introduced for irrigating the colon. In two of these cases the improvement was rapid and recovery complete. In the third case the patient developed miliary tuberculosis and died at the end of three weeks, the regular treatment having never been instituted. This case showed typical amebic ulcers above the ileocecal valve, thus indicating the possible advisability of making the opening in the ileum instead of the colon in such cases. At the same time recognizing the fact that the appendix may be the seat of amebic infection, it would be wise to remove this organ in all operative cases.

In seventy-three cases treated by these methods the results have been seventy cures, one death, one abscess of the liver, which eventually recovered, and one case improved but not cured, the patient being necessarily called to Europe after two weeks' treatment. In five cases there were at times marked tenderness over the hepatic region and considerable rise in temperature, but these symptoms rapidly subsided with more frequent douching and the application of icebags over the catput coli and the hepatic region.

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DISCUSSION.

DR. FENTON B. TURCK, Chicago—Dr. Tuttle called attention to the futile efforts to destroy the plasmodium; it is very interesting to see the efforts made to destroy them in some other way. It has been my experience that solutions have but little effect, and those that did had an effect on the circulation through the hyperemia that was produced by the drugs used. I have had a large experience in treating such infected cases while in the Army. In the treatment I have tried oil, but the oil method has not been successful. It has shown some effect in that it produced a better physiologic activity in the colon. Oil may become a powerful irritant and so excite a hyperemia of the mucosa and thus produce some effect on the plasmodium. The method I now use is hot water. At the Pan-American Congress in 1895-96 I presented a contribution on the good effects of ice water, using hot water first. I found that if I used cold water first there was danger of collapse in weak patients. Therefore I have found more benefit from using a high temperature. A temperature of 115 F. is not sufficient to produce any effect on the microorganisms; one should use a temperature of from 122 to 131 F. This can be done by gradually raising the temperature, starting with a temperature of 105 F. This heat has a very beneficial effect, seems to destroy the plasmodium, and after every treatment the amebæ disappear. Then followed the use of ice water, and the effects produced are much better than if ice water be used alone. In very weak patients the effect of the heat followed by the ice is very beneficial.

In regard to this operation I have never experienced any difficulty in reaching the caput coli. The patient should be placed on an inclined plane and the tube should be introduced into the sigmoid and water run into the colon, let out again, reintroduced, and so one can douche the entire colon. When bismuth is used the *x*-ray will demonstrate the bismuth as high up as the transverse colon. There is no difficulty in the return of the water. Introduce a little air with the water; this increases the peristalsis and the fluid goes on. The vital condition of the patient should not be overlooked.

DR. A. W. WARDEN, Weehawken, N. J.—The most successful experience I formerly had in the treatment of these cases of dysentery was by the use of ipecac or quinin, but recently I have used a remedy that I consider better. This drug is *Chaparro amargoso*, which to adults may be given in doses of from 2 to 4 grains of the extract or of 30 to 60 minims of the fluid extract every two hours during the day. In dysentery *Chaparro amargoso* seems to have a specific action by altering the secretions of the bowel in destroying the protozoa and in nullifying their power. It is also tonic, antiperiodic and astringent. *Chaparro amargoso* is also of value in the treatment of enterocolitis or summer diarrhea of children, used in solution either alone or combined with opium.

DR. PHILIP MARVEL, Atlantic City—One year ago in conversation with Dr. Tuttle about such a case he advised me to use ice water. I had been using different remedies, such as quinin, carbolic acid, nitrate of silver, argyrol, peroxid of hydrogen, and others, with little or no effect in controlling the ulcerations. At Dr. Tuttle's suggestion, I tried ice water,

and much to my satisfaction, the patient grew steadily better. It was my privilege to see her one week ago, and she was in very good condition. I should like to ask Dr. Tuttle if he has observed contractures or strictures after the water treatment. I do not know whether the stricture in my case is due to the disease or to the topical applications made by me prior to the time of beginning the ice water treatment. The patient I refer to is now perfectly well except for a contracture in the rectum. Previously, Tuttle's proctoscope could be used, i. e., passed without pain, but now this is impossible; the stricture will only admit a medium large size old style Kelly's cystoscope.

DR. SAMUEL S. GANT, New York—Was not Dr. Weir the first to suggest this opening of the appendix and using it for irrigating the colon?

DR. WILLIAM KRAUSS, Memphis, Tenn.—In reference to the diagnosis of amebic dysentery, I think I am right in stating that I never made a diagnosis unless my microscope and the patient were in the room together. I have never been able to revive a motionless ameba. The mucus from the discharge or swabbing should be transferred quickly to a warm slide. I have tried Dr. Tuttle's suggestion of cold water and with success. Water can not be used hot enough to injure the parasite.

DR. TUTTLE—As stated in the paper it was Dr. Weir who first suggested making use of the appendix for this purpose. I modified Dr. Weir's operation by drawing out the appendix and absolutely getting rid of it, at the same time obtaining access to the seat of the amebic infection. I omitted to speak of the mixed infections associated with dysentery of this type. I also wished to speak of the importance of the local treatment of ulcerations down in the rectum and in the sigmoid, when using cold water irrigations; and of hot water for improving the circulation. There are certain cases in which the ulcers become infected with a secondary infection, and they must be treated individually by local applications of tincture of iodin, etc. With regard to ipecac and quinin, how can they affect the buried amebæ? The amebæ are not in the blood, but in the submucosa. The only way to reach them in this position is by the use of low temperatures. Dr. Morton of New York has recently reported a case in which the diagnosis of amebic dysentery was made and the case was treated by him by radiized quinin, and he claims the patient is well. Operation is to be resorted to only when all other methods of cure have failed. I do not believe it is a dangerous operation; it is certainly not more dangerous than leaving the amebæ to progress to a chronic state, with its dangerous complications. There is little danger in pulling up the appendix and holding it there until adhesions form and shut off the peritoneal cavity, and then amputating it.

THE PATHOLOGY AND ETIOLOGY OF ARTHRITIS DEFORMANS.*

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In discussing this subject there are two courses open: one is to go over the various theories and ideas that have been put forth, the other is to dispense with tradition so far as we can and state as closely as possible the condition of our knowledge in regard to this subject to-day. It is perhaps well to state frankly that we are more likely to outline our ignorance than to state our knowledge, but we can at any rate determine the lines in which investigation is most likely to be profitable, because I take it that no one would be likely to say to-day that we had anything very firmly established in regard to the subject of this paper.

Through bacteriologic work we have been able to limit certain forms of arthritis definitely. It would seem best to restrict the term "infective arthritis" to those forms in which we have a distinct causal agent proved. The forms associated with the tubercle bacillus, gonococcus, pneumococcus, etc., belong to this group. Recent work suggests that acute articular rheumatism will before long be added to these. In regard to arthritis deformans, the evidence is as yet not positive, but very suggestive.

GENERAL CONSIDERATIONS.

Almost every point that one can raise in regard to this disease is a disputed one. The more important ones seem to me as follows:

1. Have we under this term one disease with many different manifestations, or have we included two, perhaps more, totally distinct diseases?

The decision in regard to this point is, of course, essential before one can get to any satisfactory conclusion as to the etiology or pathology, and I trust the discussion may clear up some of the points in regard to it. As has been frequently pointed out, there are certainly varying types of the disease. Some observers have distinguished these as the rheumatoid or atrophic type, and the osteoarthritic or hypertrophic type. In the former the disease may occur at any age from 2 to 70 years; the arthritis is usually polyarticular, may come on with great suddenness and recur perhaps at long intervals, or it may be a slow, progressive process. In this type the changes are more especially atrophic and often especially periarticular. As has been shown by Goldthwait, there is much increased excretion of calcium salts. In the second or osteoarthritic group there is in some ways a rather different picture; the classical description of the older writers, which laid special stress on the production of osteophytic growth, applies especially to these. These groups will be considered more in detail later.

2. The question of relationship of arthritis deformans to acute rheumatism. Of course, it is quite possible that a patient may have acute articular rheumatism and years afterward arthritis deformans, but I believe this is the only association between the two diseases, and that arthritis deformans has nothing whatever to do with acute articular rheumatism. Much of the confusion has been due to the mistake of considering attacks of arthritis deformans as acute articular rheumatism. Of course, this opinion is contrary to that of many of the authorities on the disease.

3. The question as to the essential etiologic factor, which we have to discuss under three heads: (a) A neural cause; (b) infection, with a definite specific organism; (c) infection, with various organisms.

One point has to be strongly kept in mind, that although the early and late conditions are quite different both clinically and pathologically, nearly all the older descriptions of the disease are based on the late changes, and no account is taken of the early ones. This has resulted in the process being commonly regarded as a degenerative one only. It would be as reasonable to base all our views as to the pathology of chronic nephritis on the conditions found in a much contracted kidney, ignoring the early stages.

Arthritis deformans appears under very different conditions and in varying forms; coming on in the first decade of life, it differs very much from the form seen in adult life. In one it may be very acute, advancing rapidly to extreme deformity and destruction of the joints.

*Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee: Drs. J. M. Anders, Frank Jones and W. S. Thayer.

or it may be exceedingly chronic and remain quiescent for a long period of time. Does this necessarily imply the existence of distinct diseases? A comparison with tuberculosis should suggest caution in passing any such judgment. Consider the varying manifestations of tuberculosis at different ages. Our knowledge of tuberculosis not so long ago was about as chaotic as of arthritis deformans to-day, and before the discovery of the tubercle bacillus it probably seemed about as hopeless to satisfactorily explain all the conditions as it is to-day in regard to arthritis deformans.

There are some points of the clinical aspect of the disease that may be noted here. One is that the more carefully the histories of the cases are studied the stronger is the impression that in the great majority there have been acute features at some time or other. It may have been many years before. This is true of both types of the disease. The man with bony deposits in the spine may have acute recurring attacks exactly as in the polyarticular form, which may begin with symptoms suggesting acute articular rheumatism. Changes in the early stages we have had comparatively little chance to study pathologically. It is to be hoped that no opportunities for autopsies on early cases will be lost. These are most likely to occur in persons who have died of accident or of some other disease.

There is one point to which I should like to draw special attention, namely, that the changes in arthritis deformans are not necessarily progressive. We have been too apt to regard the condition as going on to marked degeneration and destruction, but I believe the more carefully the disease is studied the more instances we will find of patients in whom it is to all intents and purposes cured. There is a certain amount of damage left in the joints, but this is comparatively slight and gives no great disability. This, of course, corresponds in general to our ideas of infectious disease. We have types from the very mild to the very severe. Take, for example, the varying types of virulence of gonorrheal arthritis—in one case slight and of no very great severity, and another going on to almost complete destruction of the joint, but the average case with a tendency to chronicity and the establishment of more or less change. Have we not practically a parallel condition in arthritis deformans?

PATHOLOGIC ANATOMY.

It is convenient in some ways in discussing this to take up the features of the two main types of the disease separately. An important matter to settle is the association of these two conditions. That they occur together in the same patient I think there can be no doubt, and this is evident both from clinical evidence and from the radiographs. It is, however, more convenient to consider them separately, and the terms atrophic and hypertrophic are convenient to use. This is convenient for description, whether they be considered as varying types or distinct diseases.

The Atrophic Type.—This, which is often termed "rheumatoid," corresponds in the majority of cases to the polyarticular type. The pathologic changes seem to follow a fairly definite course. The first structure to show a change is apparently the synovial membrane. If the joint be opened in an early case the capsule is usually found to be redder than normal; the surface may have a velvet appearance, or perhaps be covered by dark red material, much like granulation tissue. This granulation-like material in certain situations apparently replaces the synovial membrane and creeps over the surface of the cartilage; in the carpus this process may advance to great destruction of interosseous structures. As the process continues the synovial membrane usually becomes thickened; various changes may occur, especially in the line of proliferation, the fringes becoming larger and at times showing the so-called villous arthritis. These fringes may become detached and form foreign bodies in the joint. These in some instances may even become calcified.

That there is any definite histologic picture which is characteristic of the changes in the synovial membrane in this disease does not seem likely. The condition seems to be much alike in the various more or less chronic inflammations of the joints. In the earlier acute stages the membrane shows infiltration of a very large number of mononuclear cells, often collected irregularly, and these sometimes, when on the surface of the membrane, may lead to the naked-eye diagnosis of tubercle. In the later more chronic stages these cells become less numerous, there is considerably more fibrous tissue, and the small arteries show obliterating endarteritis. The same condition can, however, be seen in other joint inflammations and is not peculiar to arthritis deformans. It is quite probable that in certain cases there may be no further change than that mentioned in the capsule and a fair degree of recovery take place.

In many instances, however, after the changes in the synovial membrane, the cartilage is attacked. The first change in the cartilage is usually erosion, and this, as in the case reported by Dr. Hale White,[1] seemed to be determined by the condition of the synovial membrane near it. Pressure of the synovial fringes seems to determine the perforation of the cartilage. The amount of destruction of the cartilage varies greatly. It may be comparatively slight, and is often very irregular in extent. With this there may be very little damage to the bone, although the skiagraphs in some cases suggest that there is very frequently atrophy of the bone in the neighborhood of the joint. The bone may, however, show foci of inflammation, and in these areas there is comparative absence of fat cells.

The fluid found in the joints is usually somewhat turbid; the cells found do not seem to have any special significance. With these changes in the joint itself the structures about it are also involved. There is inflammation and infiltration of the periarticular structures. These become adherent to the synovial membrane, and there may be considerable swelling. Ankylosis proper of the joint rarely results. The subsequent course varies very greatly. The process may cease to advance, absorption gradually occur, and the joint left little damaged, but more susceptible to injury on subsequent attacks. Or, on the contrary, it may go on to almost complete destruction and be useless for further function. With this, of course, other conditions are associated—muscular atrophy, contractures and subluxation of the joint. In some instances the joint cavity may become practically obliterated.

What explanation can be given for such conditions? When we consider the many changes found in infective joint disease, such varying results seem perfectly possible as the effect of a specific bacterial infection. The action of toxins may be suggested, but as to this we know little. That they may influence the production of an arthritis is suggested by the cases following the injection of diphtheria antitoxin.

It is possible that various septic conditions may be

1. Guy's Hospital Reports, vol. lvii.

causal; at any rate, the influence of intercurrent septic infections in this disease is well known. Thus in a recent case, an acute outbreak with lighting up of fresh joints seemed definitely associated with an obstinate ulcer of the arm which involved the elbow joint. Attacks of cystitis and dysentery or an influenza may cause the recurrence of the previous disease. We see in the osteoarthropathy associated with bronchiectasis a condition which may have some bearing on this matter.

A difficult question to answer is as to the possibility of overgrowth of bone following on the changes which we have mentioned. Can hypertrophic bone changes, as we see shown in the so-called "osteoarthritic" type, occur with, or secondary to, these changes of the atrophic type? If this occurs, the identity of the two types is proved. The majority of the descriptions of the disease consider this to be the ordinary course, but recently some doubt has been cast on this opinion. I know of no definite pathologic reports which will settle the matter.

The Hypertrophic Type.—Here one of the prominent features is the bony outgrowth. The majority of the classical descriptions of the disease refer to this condition. The cartilage as a rule shows very marked involvement, with erosion and atrophy of the joint surface, while proliferation is occurring around the edges. This outgrowth of cartilage may become converted into bone, often very irregularly. Bannatyne states that as a rule these outgrowths have a covering of cartilage. We are all familiar with the appearance of the bones from this type of disease, although characteristic instances probably are seen clinically very much less frequently than those of the other type. In the joints of the limbs there may be changes in the bones, but in the spine the bone may be little affected. Some cases of this type may be very acute.

There are certain manifestations of the disease which deserve special mention. These are: 1. The conditions in the spine; 2. the monarticular type; 3. the so-called Still's disease.

Arthritis Deformans in the Spine.—We may have either type of the disease occurring in the vertebræ. Some involvement of the cervical region is very common in the atrophic type. This, however, rarely results in very marked permanent change. The frequency of the atrophic type in the lower spine is difficult to determine. Where we have definite bony outgrowth and ankylosis the process would seem to be of the hypertrophic type. The pathologic changes consist especially in the deposit of new bone. This occurs in very different positions. The intervertebral discs may be converted into bone, so that we have really a solid bony column, or the deposit may be largely in the ligaments, or, more uncommonly, there may be associated bony ankylosis of some of the smaller joints. These are very variable in position and extent; the bony deposit is very rarely symmetrical on the two sides. It may be on one side alone, or slight on one side and very marked on the other. The anterior ligaments may be ossified for a considerable distance and perhaps only one intervertebral articulation.

This irregularity of bony deposit is very striking when one examines a number of specimens, and is comparable to the irregular conditions found in the peripheral joints. The usual description given is that the condition begins in the articulations and extends to the ligaments, but signs of involvement of the joints do not seem to be nearly so common in museum specimens as the deposits in the ligaments.

These changes in the spine may occur alone, but are frequently found associated with changes in the peripheral joints, and these of both types. This seems a strong argument for the unity of the disease. Two distinct diseases may coexist, but is such frequent coexistence probable? The cases showing definite bony outgrowths in the spine and the atrophic type of change in the peripheral joints are by no means rare. One association of special interest is that of the spinal type, with the so-called monarticular form as seen in the shoulder or hip joint. These latter, especially in the shoulder joint, are often very definitely atrophic.

There is much confusion regarding these spinal forms We have the terms "Die chronische Steifigkeit der Wirgelsäule" (Bechterew), "Die chronische ankylosierende Entzundüng der Wirbelsäule" (Strümpell) and "Spondylose rhizomélique" (Marie), which probably are all designations for the same condition. This seems to be arthritis deformans of the spine. The varying types described depend on the condition and especially on the amount of involvement of the large peripheral joints. Bechterew, laying special stress on the associated conditions beginning with pain, sensory changes, muscular wasting, contractures, etc., regards the process as arising primarily in the nervous system. Marie, in the description of his type, insists on the condition of ankylosis of the vertebræ with ankylosis of the hips. Many variations have been described, but it seems quite possible that these may be all with one underlying condition. Cases are seen under observation at first with involvement only of the spine, and later one or both hips or shoulders concerned. I have had cases of spinal ankylosis with one, two, three or four of these large joints involved These various degrees of involvement are against there being distinct diseases.

Certain secondary changes are common; the nerve roots are frequently involved, whether by communicated inflammation or direct pressure. This is seen especially in the cases regarded as sciatica, which are often due to arthritis deformans of the spine.

The most reasonable view at present seems to consider these various spinal forms as differing manifestations of arthritis deformans.

The Monarticular Group.—This has certain rather characteristic features. It occurs usually in advanced life. The joint involvement is in one of the shoulders or one of the hips. The malady known as *morbus coxæ senilis* belongs here. The disability and the severe neuritis associated with it are important points. There are at times marked vasomotor phenomena seen in the affected limb. Pathologically, it would seem that these cases may belong to either type. In the shoulder joint the atrophic condition seems to predominate, while in the hip joint we have marked osteophytic growth. This, too, may be present in one part of the joint with very marked atrophy of other parts. The term monarticular is convenient to use as a description of a clinical type but perhaps unfortunate if it suggests anything distinctive from other forms of the disease.

The identity of this type is emphasized by the fact that if careful examination be made slight involvement of other joints can often be found. This may be nothing more than the presence of Heberden's nodes or a slight involvement of possibly one knee joint or a finger or two, but the association is always suggestive.

In a recent very typical case there was involvement of one shoulder, with marked wasting of the shoulder girdle and very severe pain. The case was regarded as a typical instance of the monarticular form. The acute features gradually subsided, and the patient was nearly

well, when suddenly the same process began very acutely in the other shoulder. Such instances speak against any special pecularity of this type. The cases may become polyarticular.

The So-Called Still's Disease.—There is some question as to what condition is meant by this term. The most remarkable view seems to be that the cases are examples of the polyarticular type of arthritis deformans occurring in children. They show certain characteristics—polyarthritis, general glandular enlargement and an enlarged spleen. In many of the cases the course is progressively downward.

Some writers would make a separate class of these cases, but where is one to draw the line?

When one sees a series of such cases at ages varying from two to twenty years, with the characteristic features present, but as the patient grows older glandular enlargement and the splenic enlargement less marked, although present, the inference seems justified that they are all examples of the same condition somewhat modified by age. I have no hesitation in saying that patients at fifteen with this condition have arthritis deformans; why not the same at the age of five? The occurrence of adherent pericardium in a large number of younger patients is of interest. It is difficult to explain, and probably has to be left as one of the points to be solved.

The evidence at present seems to point to the unity of the various processes described. There is no group which can be constantly separated. Combinations of various features are common. Thus at present I have under observation a case in a young man with pronounced hypertrophic features, with marked general glandular enlargement and enlargement of the spleen. Trophic and hypertrophic changes may occur in the same joint, or one joint may show one type and another joint the other. In one case the atrophic changes are most marked, in another the hypertrophic. Why one process should predominate in a given case we do not know.

Certain writers would make another type which they term "infective." In the present condition of our knowledge it seems better to restrict this term to conditions associated with a definite organism.

ETIOLOGY.

Regarding this, one can only discuss the theories advanced without stating any definite conclusion. As already noted, there are probably three main theories to be considered: 1, That the disease is of neural origin; 2 that it is a definite infection; 3, that it may be the result of various infections.

Neural Origin.—This dates back for a considerable period and has received very strong support in various quarters. The principal points brought forward in support of this view are as follows: Firstly, the symmetry of the lesions and their progression from the peripheral joints to those nearer the body; secondly, the similarity of the joint conditions to those which occur in association with certain disorders of the central nervous system, such as locomotor ataxia or syringomyelia; thirdly, the very marked associated muscular atrophy, the sensory disturbances, whether as regards pain or anesthesia, various trophic disturbances, such as glossy skin, the condition resembling scleroderma, etc.; fourthly, the occurrence of neuritis

Symmetry of Lesions.—In looking into these conditions strong exception may be taken as to the value of certain of them. Thus we find, on carefully studying a series of cases, that the lesions are by no means necessarily symmetrical; in fact, in many instances, quite the contrary. While in many they do begin in the peripheral joints, very often the larger joints are attacked first.

Similarity of Joint Changes.—In regard to the matter of similarity to the joint changes in locomotor ataxia is this not true only of the latter stages of the lesions of arthritis deformans? Again, is the course of the disease as studied in a large series of cases in agreement with this view? It appears to me not. The cases of arthritis deformans proceeding to absolute destruction of the joints are, after all, comparatively few, and a great many proceed to almost complete recovery. Such a difference does not seem to me to at all support the analogy between the two conditions.

Muscular and Sensory Disturbances.—The question of the muscular atrophy is a difficult one to explain. It does apparently occur with greater rapidity than is usual in other forms of arthritis. As to a satisfactory explanation, I do not know that we are able to supply one. The various trophic disturbances may depend on the frequently associated condition of neuritis. This, in many of the cases, is very well marked. Undoubtedly in some it is due to a communicated inflammation. In others it is probably the result of direct pressure, as is seen sometimes in the spinal forms.

Neuritis.—The very marked neuritis sometimes found in association with the monarticular types is at times very acute. The explanation is probably that it is often due to direct extension. In certain cases we may suggest the possibility of its being toxic.

When we turn to evidence to be obtained from the examination of the central nervous system there is very little to support this view. In a small number of cases atrophic conditions have been found in the cells of the anterior horns. They are usually in the motor ganglion cells, but have not been extensive enough to support the idea that they are important factors in the disease. In the peripheral nerves in certain instances neuritis is found, but as this is not constant we can not consider it an etiologic factor. It is more probably secondary.

The view that reflex conditions may be the cause does not seem to me sufficiently supported by any evidence we have at present. There is no evidence that any reflex action could cause the joint conditions we find.

There are some associated conditions of great interest which have been especially emphasized by Jones. Thus the occurrence with Raynaud's disease, exophthalmic goiter, etc., is interesting. In some cases one sees a condition of the skin much like scleroderma.

Specific Infection.—At present this seems to be the most reasonable view as to the etiologic factor. The character of the attack in many cases suggests an acute infection. The onset is frequently sudden, the symptoms may subside, to recur as suddenly, or may gradually progress. The subsequent course may be to complete recovery from that attack or may be to total loss of function of the affected joints; this, however, it is important to remember, being often due to secondary changes. With the acute symptoms are usually swelling, heat, redness and pain in the joints, some fever and often leucocytosis.

Visceral complications are rare, and yet in two recent cases with the joint symptoms the patients had acute pleurisy ushered in by a severe shaking chill. In one case a subsequent absence of reaction to tuberculin may be considered to rule out tuberculosis. With the acute features, marked enlargement of the glands in relation to the affected joints is almost invariably found. In the younger patients enlargement of the spleen may occur

and this in cases not considered as examples of Still's disease. Do these not suggest an infection very strongly?

It may be noted that the glandular and splenic enlargement may occur with both types of the disease. The conditions in the nervous system may be explained by the action of toxins. When we turn to examine the results of cultural work, there is little as yet to show. Various observers have reported organisms (Schüller Bannatyne, Wohlmann and Blaxall, Chauffard and Raymond, Van Dungen and Schmide, etc.), but the most important findings seem to be those of Poynton and Paine.[2] From the knee joint of a man showing osteoarthritic changes they obtained a diplococcus which caused arthritis in a rabbit, with ulceration of the cartilage, flattening of the articular surfaces and the production of osteophytes with lipping of the joint. Such a result is certainly most suggestive. The results of cultures in the Johns Hopkins Hospital have thus far been negative.

Various Infections.—This view is a tempting one in many ways. As one organism may set up very different changes, so various organisms may cause the same changes. The association of arthritis deformans with various processes, such as pyorrhea, cystitis, dysentery, is suggestive. Tonsillitis and pyorrhea have by some been suggested as important sources of infection. In this series tonsillitis has been infrequent, while pyorrhea is so common that one hesitates to attach great importance to it as a causal factor. In rare cases the treatment of such local conditions has resulted in marked improvement in the general condition.

Whether these may be causal can not be proved, but they certainly at times seem to be definitely associated with exacerbations. This is not invariably the case. Some patients go through intercurrent infections without any change in the arthritis, or may even seem to be better for a time. This is true not only of septic processes, but also of infections such as influenza, measles, mumps, etc. Some would make an association between acute articular rheumatism and arthritis deformans in this way. Gonorrhea has by many observers been held to have a special relationship. In our cases, however, this has not been the case.

STATISTICS OF ONE HUNDRED AND SEVENTY CASES.

In a series of 170 cases, among the acute infections in the previous history, measles was the most common, viz., in 93 instances. Following this came whooping cough in 43, mumps in 31, scarlet fever in 27, malaria in 26, typhoid fever in 20, chicken-pox in 18, influenza in 15, pneumonia in 16, diphtheria in 11, erysipelas in 3 and smallpox in 2. Recurring attacks of tonsillitis were infrequent, being noted in 7 cases. Various conditions such as otitis media, pleurisy, carbuncles, dysentery, cystitis, etc., were noted in one or two instances. There was a previous history of gonorrhea in 23 cases, or 13 per cent. There was a history of syphilis in 5, and chancroid in 1. It does not seem possible to speak with any certainty at present regarding the exact relationship of these many infections to arthritis deformans.

Regarding the various factors of incidence, the figures are as follows:

Family History.—There was a definite family history of arthritis in 62 cases. Of these, 15 were undoubtedly arthritis deformans, 35 were termed "rheumatism," and undoubtedly many of these were arthritis deformans; 1 was given as gout, and in 11 the nature was unknown. In some the family history of arthritis deformans was remarkable. One patient's father had the disease in a severe form, three brothers and three sisters suffered with it, all having chronic changes; only one sister had escaped. The patient's mother had escaped, but in her family the disease was common, all her brothers and sisters having it. Her mother also suffered with it. The combination of two such arthritic stocks would seem to portend disaster for the offspring. In another case there was a family history of the disease for four generations. In patients with a definite family history the disease does not seem to appear at an earlier age than in the others. There was a family history of tuberculosis in 39 cases.

Sex.—The males were in the majority—89 males and 81 females. This is unusual in a large series, the females usually being in the majority. Many series give as high as 80 per cent. of females.

Race.—The white numbered 161, the colored 9. The colored show a marked relative less susceptibility to the disease. The proportion of white to colored in the hospital is 7 to 1, while the proportion of cases of arthritis deformans is 16 to 1. The negro is specially prone to gonorrhea, tuberculosis and acute articular rheumatism, a point of interest in regard to their association with arthritis deformans.

Occupation.—The largest number were engaged in housework, namely, 64; in other indoor occupations there were 46. At outdoor work there were 33. There was a surprisingly small number engaged in occupations involving special exposure. Neither exposure nor trauma seemed to play an important part as etiologic factors in this series.

Age.—On admission this was:

1 to 10	3	51 to 60	32
11 to 20	11	61 to 70	11
21 to 30	31	71 to 80	4
31 to 40	47	81 to 90	1
41 to 50	30		

It is to be noted that 92 were below 40 years of age and 45 below 30.

The age at onset, in 165 cases, shows a rather different distribution:

1 to 10	15	41 to 50	23
11 to 20	30	51 to 60	18
21 to 30	33	61 to 70	6
31 to 40	38	71 to 80	2

Practically in 70 per cent the onset was before the age of 40, while in nearly one-half it was before the age of 30 years. This seems important, as so often the disease is considered to usually occur in late adult life.

Alcohol.—Fifty-one had used alcohol, the majority in moderation. About 10 might be described as heavy drinkers.

Pregnancy and Miscarriage.—While in some series these seem to have an important relationship to the onset of the disease, such was not the case in this clinic. Frequent repeated childbearing had occurred in some, but these are not numerous enough to be important. In only three of the women had the disease appeared soon after confinement. Uterine conditions were infrequent. Mental worry or anxiety did not seem to have played any part as an etiologic factor.

CONCLUSIONS.

The conclusions which may be made are as follows:

1. That there are two great types of cases, the atrophic and hypertrophic, which are probably varying manifestations of the same disease.

2. That there are many variations, such as the spinal forms, the so-called monarticular form, the form occurring in children, etc., which are probably all arthritis deformans

2. Trans. of the Path. Soc of London, vol. liii, 1902, p. 221.

3. That the etiologic factor is not determined, but our present knowledge points to its being an infection of some nature.

4. That no opportunity of pathologic and bacteriologic examination should be neglected.

ARTHRITIS DEFORMANS.*

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At last light seems to be finding its way in among the obscurities of the rheumatism problem. Acute articular rheumatism is a microbic disease, one of whose principal features is its tendency to get well entirely except for the mark it may leave on the heart. Uric acid has nothing to do with rheumatic conditions, and is only a fetish that was set up to be worshipped by those who wanted to find scientific explanations for disease long before physiologic chemistry was ready to furnish any such explanation. Rheumatic gout now disappears, there is no middle term between gout and rheumatism, and the two diseases are not closely related at any point. Chronic rheumatism is a vanishing ailment, seen more and more rarely as greater care is used in diagnosis, and in the recognition of various painful nervous conditions with which it was formerly confounded.

This preliminary clearing of the field leaves us, however, with a group of diseases, with regard to which as yet only abortive attempts have been made to get at a definite classification Under this group of diseases are found all those in which there is a deformity of joints usually progressive and not due to traumatism or known infection. The name selected for this group of diseases, arthritis deformans, is sufficiently noncommittal to be acceptable. The affections are certainly deforming. The underlying pathologic condition can be regarded, as a rule, as of inflammatory origin, though the processes of the inflammation run from acute, almost fulminant, to the extremely chronic type, which may take years before serious deformity results.

It may be said that it is only in recent years that attention has been especially called to this group of diseases. Physicians now see them frequently, and while a few years ago they were considered to be examples of a rather rare disease, this is due to the fact that in most cases the deformities when seen were attributed either to chronic rheumatism or to gout. The differential diagnosis has come for the most part within the last twenty-five years.

Arthritis deformans itself, however, in some form can be traced in history at nearly all times. The bones from the bodies of persons probably 5,500 years ago show in certain cases the signs of changes due to arthritis deformans. Bland Sutton described the same lesions as occurring in a mummy, taken from an Egyptian tomb, and which had been buried about 2,000 years before Christ. Virchow, excavating the bones from the cemetery of a medieval monastery, found similar conditions. It has even been said that the distinguished Italian painter of the Renaissance, Botticelli, always painted ugly hands. As a matter of fact, however, careful examination of his pictures will show that his favorite model seems to have suffered from arthritis deformans, since the hands show signs of this disease, and the reason for the ugly hands in his pictures is that, just as for her hollow chest, he followed this model too closely.

Arthritis deformans is, then, a very old disease. It has existed continuously and it occurs much more frequently than has been thought. The affection of the spine, which is due to this disease and which is often spoken of as very rare, has been traced by Dr. Ruhrah[1] down the centuries from the earliest times in Egypt, and any one who sees many cases in a city dispensary and hospital is sure to see one or more examples of the disease every year.

TYPES OF THE DISEASE.

Such distinguished English authorities as Dr. Hale White, Dr. Garrod and Dr. Bannatyne divide the group of diseases commonly described under the name arthritis deformans into three types. These types may be briefly described as follows: There is, first, the disease commonly known as osteoarthritis, often confined to the hip joint, and most common in old men. It consists of a bending of the neck of the femur and some other bony deformities connected with the hip joint. Secondly, there is the disease in its milder forms, often not recognized as a special affection, but considered as the result of certain kinds of work or as of traumatic origin, which is most common in women in middle life, and is represented by deformities occurring in the terminal joints of the thumb, though in this the terminal joint is not necessarily always first affected. Dr. Hale White says that the deformity becomes considerable in these cases, and is ultimately largely due to bony outgrowth. "In a large number of cases the trouble gradually spreads until many joints are implicated and the woman may become a helpless cripple, and although in one sense she is very severely ill, yet the disease is very slow, the symptoms are not acute, and there is no pyrexia."

Whether the affection thus described is different from what is ordinarily called Heberden's nodes is hard to say. There seem to be cases in which a small amount of bony outgrowth on the terminal phalanges of two or three fingers does not progress beyond a certain point of disfigurement, and gives scarcely any discomfort except when there is some trauma; this, however, is not infrequent, because of the awkwardness induced by the deformity. According to a long-established English medical tradition, Heberden's nodes occur especially in long-lived people. Whether there may be several groups of these nodular affections of the terminal joints of the fingers remains to be seen. Some of the cases certainly belong to an abortive type, and do not progress beyond a certain degree of awkwardness and unsightliness without further discomfort.

The third form of arthritis deformans is the one of most interest, since it attacks young people, simulates ordinary acute rheumatism, produces lasting changes in joints, has a definite tendency to recurrence, and ultimately makes its victim a helpless and pitiable cripple. The disease is more common in women than in men, occurring usually in young women, as Hale White says, about the age of 20.

This affection is distinctly progressive. While it is markedly symmetrical in the two hands, it is likely to invade the wrists and then other joints, and the same thing may happen in the legs.

This is the form of arthritis deformans which be-

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee: Drs. J. M. Anders, Frank Jones and W. S. Thayer.

1. The Amer. Jour. Med. Sciences, November, 1903.

cause of its simulation of ordinary acute rheumatic arthritis, is especially interesting.

DIAGNOSIS.

The differential diagnosis, however, if once suspicion is aroused, does not seem very difficult even in the early stages. Certain joints are characteristically affected in true arthritis deformans. Instead of the large joints as in rheumatism, it is mainly the joints of the fingers and particularly those of the terminal phalanges which are swollen and tender. In most of the cases there is also some swelling and tenderness over the joints of the lower jaw. As the temporo-maxillary joints are practically never affected in ordinary acute rheumatic arthritis, it may be set down as probable at once when the patient complains of tenderness and disability in the jaw, with some pain on movement and swelling, that the affection is arthritis deformans. In many cases the spine does not escape. There is almost certain to be some stiffness of the neck traceable not to any spasm of the muscles, but to the tenderness of the joints. This may be so slight as to escape at first, and may disappear after a time, but its presence is always an added factor of suspicion as regards the relationship of the affection under treatment to arthritis deformans, rather than to ordinary acute rheumatic arthritis.

At the beginning of a case of arthritis deformans, there may be some hesitation as to the differential diagnosis, especially if, besides the fingers, one or more of the large joints are affected. In these cases, however, certain features, if looked for, are sure to arouse suspicion. The patient has considerably more discomfort and complains of more pain and tenderness than the amount of fever and involvement of the joints quite justifies. Of course, the question of bearing pain is very individual, and nervous patients are likely to complain much more than others. Arthritis deformans, as a rule, however, attacks people who are not especially of nervous organization. Young servant girls and hard-working men under 35 are especially its victims. The fever from which they suffer is usually not so high as it would be from ordinary acute arthritis. It rarely rises much above 102 degrees, and may remain constantly below this. It is more continuous, too, than that of true rheumatic fever; that is, it has less daily variations.

Perhaps the most characteristic of the differential diagnostic symptoms is that the salicylates fail to reduce the fever very materially, and fail almost completely to lessen the pain and discomfort. Very often the restlessness induced by this will have to be relieved by some form of opium, and even of this the patient will need more than would be anticipated.

A marked difference between ordinary acute rheumatism and arthritis deformans is found in certain slow running cases of the deforming affection. Patients will sometimes give a history of having had swelling and some tenderness around the joints of the fingers and toes which was not, however, of sufficient intensity to make them give up their work. Gradually other joints become involved. The wrist, the ankles and the knees may become affected. Not infrequently the temporo-maxillary joint shows signs of the presence of the affection. If the patient has put off the inevitable coming to the hospital for a considerable period, usually there is a notable reduction in weight and the general health is much disturbed. Usually in these cases it will be found that while there have been intervals during which the affection has not been so severe as at other times, *quasi* intermissions in the course of the disease, there has seldom been an absence of tired feelings with chilly feelings on first exposure to air that would seem to indicate the more or less constant pressure of a low-grade fever. In these cases the fever usually runs between 100 and 101 degrees.

PREDISPOSING FACTORS.

Perhaps the most important predisposing cause of the affection is overwork. Hence the tendency for it to occur, especially in people who are deeply interested in their work, who have devoted themselves to it, who have no vices, who do not drink and who have no special care for the pleasures of the table. Not infrequently the disease occurs at a moment when patients are run down in weight because of their tendency to neglect their meals in their interest in their work. It is not unusual, then, to have patients ask rather complainingly why they should suffer from such a disease which is usually attributed to some abuse in the matter of eating or drinking, or to some special exposure.

With regard to exposure as a prominent factor in the causation of the disease, it seems hard to get at a definite conclusion. The disease occurs not uncommonly in those who are living a rather sedentary indoor life, though quite commonly there is a story of their having been exposed to a severe wetting or some special inclemency of the weather not long before they noticed the first symptoms of their attack. Whether this is a coincidence, and is recalled mainly because the patient feels that there must be some such connection between what is commonly called rheumatism and dampness or exposure is hard to determine. In one case where there seemed no doubt from the affirmation of the patient, a very intelligent man, that a preceding exposure had been one of the causes of his illness, careful inquiry showed that the wetting had taken place some twenty-six days before he felt uncomfortable sensations which represented the preliminary stage of the disease, and over a month before there were any special localized swellings of the tendons. It would be very hard to persuade most physicians that an exposure a month away had anything to do with an attack of a disease so acute as arthritis deformans.

PROGNOSIS.

The prognosis of typical cases of acute arthritis deformans is not always so unfavorable as seems usually to be thought. The case of a physician that has recently been under observation exemplifies this. Toward the end of January he suffered with a series of red, swollen, tender joints, affecting the fingers to a marked degree and the toes to some degree. Notwithstanding the presence of the affection, he was able to go on with his work to some extent, and in fact the general course of the case was so mild that there might be some hesitation as to the diagnosis, except for the tendency to distinct ulnar deformity, and the fact that the jaws were affected as well as the joints of the fingers. This involvement of the jaw is considered by everyone who has seen many cases as the most pathognomonic symptom of arthritis deformans. In this case now at the end of four months nearly all the deformity has disappeared. The index finger of the right hand is still slightly misshapen, and there are also nodules at the joints of other fingers, but these are not very marked, and the patient is able to close his fists very well. Over the deformed parts there is still slight tenderness.

One of the most important features of the affection is the tendency to recurrence. Not infrequently pa-

tients seem practically to get completely over the first attack. Some few signs of the affection are left, however. Usually within a year or two there is a second attack, which leaves distinctly more deformity, and makes it clear that the patient is not going to escape so easily as was first thought. Subsequent attacks are apt to occur at briefer intervals. In each there is a redness, swelling and exquisite tenderness. After each attack there is more disorganization of joints than before, though there is always a distinct remission with considerable improvement, and the raising of the hopes of the patients, sometimes also of the physician.

THE TREATMENT OF ARTHRITIS DEFORMANS.*

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It is only within a very few years that systematic efforts to evolve an effective management for arthritis deformans have been attempted, largely because it has been only a few years since the affection has been susceptible of anything like a sharp diagnostic differentiation. For this reason text-book literature on its therapeutics is meager and very unsatisfactory when subjected to the test of clinical application. About all that can be gleaned from it is a recommendation to give the patient cod liver oil, iron, or potassium iodid for long periods, to maintain his health in as good condition as possible, and to send him to some hot springs or other health resort. Although its present-day treatment is disappointing on the whole, yet evidence is accumulating which indicates that modern therapy is capable of producing curative results in many cases, and marked amelioration of the symptomatology in a large majority of them; that arthritis deformans will soon be rescued from the category of hopelessly incurable diseases.

IMPORTANCE OF EARLY DIAGNOSIS.

The first and a most important step in the management of this disease is to make an early diagnosis. This is important from a therapeutic point of view because, first, when these cases are brought under an appropriate line of management at a moderately early stage, the great majority of them can be restored to useful and comfortable lives, and a large proportion can be restored to apparently perfect health, whereas, if the disease is unrecognized, hence improperly treated for months or years, organic changes will take place in the structures involved of such a nature and degree as will render utterly impossible the restoration of normal function; and, second, the treatments appropriate to the diseases which most closely resemble it clinically are not only entirely inefficacious for the relief of arthritis deformans, but in some respects are positively harmful. This is especially true with reference to rheumatism and neuritis, the affections with which arthritis deformans is most frequently confounded.

DIET.

Another important factor in its management is the prescription of a proper diet. The widespread impression that gout and rheumatism were largely concerned in the etiology of the disease is responsible for the common practice of denying these patients red meats, and sometimes all meats. I believe that this restriction is not only unnecessary usually, but that it frequently inflicts positive harm on the patient. Malnutrition is an almost constant characteristic of this disease, and the more nourishing and generous the diet, within proper limits, the more will the progress toward recovery be facilitated. These dietary limits are represented by the capacity of the individual patient for digesting and assimilating his food, and must be defined, as regards both quantity and variety, by this capacity as ascertained in each individual case. It has been my experience that, as a rule, meat of all kinds except pork are well digested by these patients and beneficial, and that restriction is much more frequently required with reference to the starches and sugars. Intestinal indigestion requires attention in these cases with a moderate degree of frequency.

CLOTHING.

In any disease exhibiting more or less constant pain as a symptom a good quality of woolen underclothing, of light weight in the summer and moderately heavy in the winter, is a source of comfort to the patient in protecting the skin from sudden changes of temperature, which are liable to increase the pain. Arthritis deformans is no exception to the rule. Protection of the skin by woolen underwear renders another service by maintaining the function of this emunctory, which is so important a factor in the general bodily metabolism. Impairment of general metabolism is usually a prominent feature of this disorder.

PHYSIOLOGIC REST.

During the acute stages the joints involved should be kept at rest. I do not mean such complete rest as would necessitate enclosing the member in a splint, but the patient should be directed not to use the joint to such a degree as to produce pain. Patients are sometimes urged to force the joints to functionate, no matter how exquisite the anguish induced, and the effect is usually to increase the local pathology already present, to say nothing of the evil influence on the general nervous system. Nothing is more depressing than severe and long-continued pain. These remarks also apply to passive movements.

ACTIVE AND PASSIVE MOVEMENTS.

After the acute process has subsided, judiciously regulated, gradually increased movements of the stiffened joints, both active and passive, are beneficial, and frequently partial ankylosis can be entirely removed thereby, but the sudden forcible breaking down of the ankylosis of arthritis deformans, when it exists to any great degree, is a procedure which I have never seen followed by anything but evil results in the way of increased and usually entirely hopeless ankylosis, and in mentioning the procedure I desire to express my conviction that it should be expunged from the therapeutic category of this disease.

MEDICINAL TREATMENT.

The drug treatment of uncomplicated arthritis deformans is unsatisfactory in the extreme so far as the obtaining of curative results is concerned. Only a very few elements of the materia medica have succeeded in gaining a lasting reputation in this connection, and all of those that have, except the salicylates, are of the "tonic" and "alterative" classes, hence exert their beneficial influence through their power to improve the general metabolic functions. Prominent among these may be mentioned the iodid of iron, cod liver oil, the hypophosphites

*Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee: Drs. J. M. Anders, Frank Jones and W. S. Thayer.

arsenic in its various combinations, strychnia, the chlorid of gold and sodium and potassium iodid. The first mentioned has given me the best results, improvement usually manifesting itself, when it obtains at all, in about three weeks after the commencement of its administration. It should be given for periods of six weeks, with an intermision of two or three weeks. Cod liver oil does good service in those cases characterized by emaciation, if well borne by the stomach. Arsenic and strychnia are fairly useful in many instances as general tonics. The chlorid of gold and sodium and potassium iodid or hydriodic acid sometimes seem to render considerable service, but they fail to influence the disease in such a large proportion of cases that their importance is not nearly so great as is generally supposed.

The relation of the salicylates to this disease deserves special mention, as they sometimes render excellent service in relieving pain and swelling. Although it is improbable that rheumatism is an etiologic factor in any considerable number of cases, yet it is not so very uncommon to see an attack of rheumatism engrafted on an already existent arthritis deformans, and, as the salicylates fail absolutely in so many manifestly uncomplicated cases, it seems reasonable to consider that many of those in which they are useful are instances of such a complication. The fact that beneficial influence is obtainable by their use only up to a certain point would favor this view. The difficulty of making a positive diagnosis of rheumatic invasion under such circumstances is in many cases, of course, insuperable. Whatever the explanation, the fact remains that the salicylates, especially aspirin, are sometimes very helpful in relieving painful joint conditions occurring during the course of arthritis deformans.

Constipation is sometimes present in a degree to demand attention, and the various mineral waters, magnesium sulphate, the aloin, strychnia and belladonna mixture, or compound licorice powder, will be found helpful. What particular one should be used must be determined by the tolerance of the individual patient.

Digestive disorders can generally be controlled by regulating the diet, but the digestive ferments, carminatives, charcoal, bismuth subnitrate and strychnia will sometimes have to be called on to assist in this work.

The constant harassing pain is one of the most troublesome symptoms of the disease so far as management is concerned. Most of these patients have become so habituated to the pain that they bear a moderate amount without much complaint, but sometimes severe exacerbations, lasting for several hours, days or weeks, will occur which demand attention. Opium, or any of its derivatives, is inadvisable because of the chronic character of the trouble, because it loses its influence in a few days unless given in increasing doses, and because of its evil effects on the system at large. I have occasionally given coal tar derivatives when the paroxysms were very severe, but they also produce undesirable results on the metabolic and circulatory functions when continuously administered in effective doses for any length of time. None of the ordinary pain-relieving drugs are of much service in controlling this symptom, with the exception of the salicylates, as hereinbefore mentioned, but much relief can usually be obtained by the use of external applications and the hot water bag; baume analgesique (Bengue), the tincture of iodin externally, and the various anodyne lotions have given me better results than anything else.

A few months ago, in a paper read before the New Haven County Medical Society, the belief was expressed that a new era was dawning in therapeutics which would be characterized by the prominent position which the natural physical and psychical forces would occupy in the management of disease processes, as opposed to a therapy constituted exclusively by the administration of drugs and ablative surgical procedures. In the treatment of the disease under consideration this new era has already established itself, and it is to the so-called physiologic therapeutics that we must look to-day for the attainment of anything approaching satisfactory results in any large number of cases.

DRY HOT AIR.

Dry hot air, electricity and mechanical vibratory stimulation are the most useful of these measures, and hydrotherapy will probably join their ranks in the near future.

In my opinion, the body dry hot air application is to-day the sheet anchor of hope in the management of arthritis deformans. Its physiologic action may be summarized as follows: First, it produces an immediate and powerful stimulation of the vital physical signs; second, a reflex stimulation of the functions of all the organs and tissues of the body, resulting in, first, a degree of elimination of urea and other excreta which I believe to be unequaled by that producible with any other measure now known, and, second, an amount of reconstructive activity which I believe at the present time to be also in excess of that derivable from the use of other agents. Ample logical indication for its employment is found when we consider these influences in connection with the symptomatology and what is known of the pathology of the disease.

There is usually present, first, a notable depression of the vital physical phenomena; second, impairment of function of many of the organs concerned in the digestive, elaborative and assimilative processes of the body; and, third, a marked deficiency in the reconstructive activities. The inferences suggested above have been fairly well borne out by practical results accruing in my own personal clinical experience, and I have come to look on this measure as the most efficient single element in the treatment of the disease.

Before leaving the subject of the body dry hot air application, I wish to specify just what I mean thereby. Many who have used dry hot air for the purpose of relieving the victims of this affliction will not bear me out in the statement which I have just made regarding its efficacy, and I believe that the unsatisfactory results are largely due, other conditions being equal, to differences in the method of employment rather than to weakness inherent in the remedy itself. First, it is not a cabinet bath, heated by an alcohol lamp to 150 or 160 F., and in which the patient is treated sitting on a stool; second, it is not a Turkish bath, with a temperature of 180 or 200 F., and, third, it is not an incandescent or arc light bath. The first and second mentioned procedures are almost always debilitating and pernicious when applied with a moderate degree of frequency to cases of this disease, and in the third the light effects are so prominent as to render it impossible to produce anything approaching a proper degree of purely thermal influence. The body dry hot air application to which I refer is given by means of a metallic asbestos-lined cylinder, long enough to include the body up to the armpits, and heated by gas, gasoline or electricity. The treatment intensity should be from 350 to 400 F., and the immediate clinical effects are profound enough to render it necessary for the patient to assume the recumbent position, not only during the immediate

application, but for some time afterward. The heat should be run up rapidly, so as to secure the necessary degree of physiologic influence as quickly as possible. As a rule, an increase in the pulse rate to 120 beats per minute or an increase in the mouth temperature of 2 F. over what it was before treatment indicates that a proper degree of influence has been secured, and from twenty to thirty-five minutes' exposure will suffice under ordinary conditions. By this method we secure a profound stimulation of physiologic function, whereas if the patient is treated for long periods with the lower degrees of heat the ultimate result is relaxing, depressing and pernicious.

The local dry hot air application is rarely of any use in the treatment of this disease except for the relief of pain, and even for this purpose it fails more often than it succeeds, and sometimes marked aggravation is the result.

ELECTRICITY.

The next most useful of the physiologic agents is electricity, and the several forms of current have distinct and different spheres of influence. The one of greatest general utility is that derived from the static machine, and the wave current and the spark are the most frequently serviceable modalities.

Some authors claim to have cured cases with the static current alone, but such an instance has never come within my personal experience, and it is usually difficult enough to benefit them materially when all the resources at our command are brought into action.

During the acute stage the static wave current may be applied to the affected joints twice daily by means of sheet tin electrodes molded to the parts, and is frequently very effective in relieving the pain. The influence of every static application is general as well as local, no matter how the treatment is localized, and the effect on the organism at large is often happy to a degree.

Sparks may be applied over the spine and the general muscular areas of the body for their tonic effect, at any stage of the disease, but as a rule they had better not be applied to joints wherein acute symptoms are manifest. When the acute process has subsided, however, and the local phenomena have become confined to soreness and fibrous enlargement, I know of no one measure which will so frequently prove effective in removing both as judiciously-applied static sparks. The various neuralgias which accompany the disease are also amenable as a rule to the static spark.

The brush discharge from the wooden or carbon electrode, applied to the affected part for fifteen or twenty minutes, is effective in relieving the neuralgias as well as the aching pains of the acute conditions, in a certain number of cases.

The general application of the high-frequency current, applied by means of the spiral wire cage of D'Arsonval or the auto-condensation cushion, seems to promise much because of its strong tonic influence on the nervous system and general metabolism, but enough has not yet been done with it in this disease to render possible the formation of reliable conclusions. It has seemed to have exercised a beneficial influence on some cases in the treatment of which I have used it, enough to encourage me to continue observations on it in the future.

The continuous current in the form of central galvanization is very helpful in improving the patient's general condition and as a sedative to the nervous system, but I have never been able to secure any local effects with it in this disease that I could not have secured just as well, and usually better, with something else, except in muscular spasm due to nerve irritation; in the torticollis of arthritis deformans the continuous current in doses of from 5 to 20 milliampères for fifteen minutes will sometimes give more satisfaction than anything else.

The rapidly interrupted magnetic-induced current from 1,500 yards of No. 36 wire is very useful for the relief of pain wherever or whenever it may be encountered. The strength of the current should be regulated according to the sensation of the individual patient and should never exceed the limit of absolute comfort. It may be applied as often as pain demands it without any injury to the patient.

Mechanical vibratory stimulation has not yet been used extensively enough to justify the formation of an opinion as to its curative powers in the treatment of this affection. It is undoubtedly, however, a powerful general tonic; it will relieve the pain of muscular spasm and relax the spasm more effectively than any other measure with which I am acquainted, except anesthesia, and it is powerfully and harmlessly sedative to the irritable nervous system. In all of these capacities it enters into the management of arthritis deformans, and I should very much dislike to dispense with it as a part of my armamentarium.

MASSAGE.

Massage, either general or local, will very rarely have to be considered in the treatment of this affection when the agencies already mentioned are available. When they are not, however, it will be found useful in relieving pain, locally, and in improving the patient's condition generally.

GENERAL ROUTINE TREATMENT.

As I have already said, it is sufficiently difficult to benefit these patients materially, even when we use all the resources at our command; this implies the desirability of giving them the benefit of everything that is known to exhibit helpful properties and brings up the question "What are the most advantageous therapeutic combinations?" That which has given me the most satisfaction as a routine treatment, to be modified according to the conditions surrounding the individual cases, is as follows:

1. A diet as generous as can be digested and assimilated by the individual case, and consisting largely of red meats.

2. Rest in bed for at least ten hours out of the twenty-four.

3. A pill consisting of 1/40 of a grain of strychnia sulphate and 1½ grains of ferrous iodid three times daily half an hour before meals, and in the emaciated cases 1 to 4 drams of cod-liver oil three times daily, after meals.

4. A dose of some one of the mineral waters before breakfast every two or three days, if constipation is present.

5. A body dry hot air treatment two or three times weekly.

6. Central galvanization once or twice weekly.

7. A general application of mechanical vibratory stimulation two or three times weekly.

8. A static electrical application at least once every day, consisting, in acute cases, of the Morton wave current localized over the affected joints or spine, and, in the chronic cases, of long, thick sparks to the affected joints one day and the Morton wave current localized over these joints the next. In some cases some one of the high-frequency currents, applied either locally or generally, may advantageously replace some of these static applications or be added to them.

9. With ankylosed joints, wherein the acute condition

has subsided and the functional impairment is not due to osteophyte formation (and in my experience it has not frequently been due to this condition), passive movements every day, in the form of alternate forced flexion and extension, the attempt being made to increase the excursion of the manipulated member each time, are of considerable use. The movements should not be violent enough to produce sudden breaking down of the offending tissue or to cause the patient much pain; otherwise the original pathologic process is very likely to be reawakened and the last condition of the victim will be worse than the first. The effects of these movements should be carefully watched, as this same evil result will follow if they are commenced too early.

STATISTICS.

"The proof of the pudding is in the eating," and the statistics of the following 51 cases which I have had under treatment in private practice during the past four years illustrate what it is possible to accomplish by the application of the above-outlined management. For the sake of convenience in describing the gross results attained, I have divided them into five groups, the first consisting of those who have been entirely free from all active symptoms of the disease for periods ranging from 1 to 2½ years; the second, of those who have been "greatly benefited," and, third, of those who have been "considerably benefited"; the fourth, "slightly benefited," and the fifth of those who have "not been benefited at all."

The first group consists of 9 cases, 3 men and 6 women, ranging in age from 35 to 62 years. They had suffered from the disease before coming under treatment for periods ranging from three months to fifteen years. The general condition as regards nourishment, food, digestion and assimilation and sleeping ability when treatment was commenced was bad in 5, fair in 2, and good in 2. It is now perfectly normal in all. Five of them were totally incapacited for the performance of their ordinary duties, and 4 were partially incapacitated. Complete ankylosis of one or more joints was present in 1 case, partial ankylosis in 5, and in 3 cases no ankylosis was present. Five suffered severely from more or less constant pain, 2 suffered only slight pain when the joint was at rest, but were very sensitive to manipulation, and 2 suffered only when the joint was manipulated or functionating. In 1 of these cases the disease process was confined to the joints of the fingers and toes; in every other case in the whole series of 51 one or more of the larger joints were involved, either in addition to the fingers and toes, or without the fingers and toes being involved at all. The shortest time required for the complete disappearance of the symptoms in any of these cases was two months, the longest thirteen months.

Two of these suffered recurrences of the disease, one eighteen months after treatment had been suspended and the other two years after. In the first mentioned the relapse was so slight that the patient did not return for treatment, all evidences of the disease disappearing after two months' treatment with iron, strychnia and the chlorid of gold and sodium. In the other the relapse was quite severe, it being necessary to treat the patient very thoroughly for three months before all evidences of the disease again completely disappeared.

The second group, or those who have been "greatly benefited," is composed of 16 cases, 8 men and 8 women, ranging in age from 21 to 60 years, and who had suffered from the disease before coming under treatment for periods ranging from six months to twenty years. There are included in this group 5 cases which have been entirely free from all active evidences of the disease for periods ranging from six weeks to ten months, and who give every promise of being properly classifiable in the first group during the coming year and making a total of 14 cases in which all active evidences of the disease have been absent for periods ranging from six weeks to two and a half years; 4 who are still under treatment which has already continued intermittently for periods varying from ten to eighteen months, and who are steadily improving; 7 whose treatment was prematurely discontinued for various reasons after the benefit was secured. Seven were totally incapacitated for the performance of their ordinary duties; 9 were partially so. The general condition when treatment was commenced was bad in 9, fair only in 4, in all of which it is now either normal or greatly improved, and good in 3. Complete ankylosis of one or more joints that was completely relieved was present in 1 case, that has been partially relieved in 4, and not relieved at all in 5. Partial ankylosis of one or more joints that has been completely relieved was present in 6 cases, that has been relieved to some extent in 3, and that has not been relieved at all in 3. In 7 cases no ankylosis was present. Severe pain that was constantly in evidence was present in 11 cases; in 3 of these it was removed completely, and in 8 it was completely removed in some joints and in others to such an extent as to be in evidence only when the affected part was manipulated or functionating. In 5 cases pain was present only on manipulation or functionation of the joints when treatment was commenced; in 4 of these it was removed entirely; in 1 it still persists to a slight extent after seven months of treatment.

The third group, or those who were "considerably benefited," consists of 11 cases, 3 men and 8 women, ranging in age from 30 to 75 years, and who had been ill with the disease before coming under treatment for periods ranging from six months to ten years. One is still under treatment and improving, and 10 discontinued treatment prematurely for various reasons while still improving. The general condition when treatment was commenced was bad in 6, fair only in 5; all were noticeably improved in this respect when treatment was discontinued. Complete ankylosis of one or more joints was present in 4, which was not influenced at all by treatment; partial ankylosis of one or more joints in 7, which was completely removed in 1, partially removed in 3, not influenced in 5. In 5 no ankylosis was present. Pain of various degrees was constantly present in 6, in all of which cases its severity was much lessened; was present on manipulation or functionation only in 5, in 3 of which its severity was much lessened, and in 2 it was not influenced. Seven were totally incapacitated for the performance of their ordinary duties, 4 partially so.

The fourth group, or those who were "slightly benefited," consists of 10 cases, 1 man and 9 women, ranging in age from 23 to 73 years, who had been ill before coming under treatment for periods ranging from two months to five years. Three are still under treatment and improving, 6 discontinued treatment prematurely, and 1 refused to improve in any respect except as to her general condition in spite of all that I could do, although she continued treatment conscientiously for six months; she did not grow any worse, however, and during the two years that have elapsed since treatment was discontinued she has been more comfortable at times than previously, and, as she was steadily growing worse when she came under observation, it is possible that she was somewhat bene-

fited. The general condition when treatment was commenced was bad in 5 and fair in 5; in 7 it was slightly improved, in 3 uninfluenced. Complete ankylosis was present in 1 case, and uninfluenced by the treatment received; partial ankylosis only in 2, which was slightly improved; ankylosis was not present in 7 cases. Pain of various degrees was constantly present in 9, and was slightly relieved in all but one; present only on manipulation or functionation in 1, and was slightly relieved in this case while she was under treatment. Five were totally incapacitated for the performance of their ordinary duties, 5 partially so.

The last group, or those who were "not benefited," consists of 5 cases, 1 man and 4 women, ranging in age from 21 to 60 years, who had been ill for from three months to four years before applying for treatment, and none of whom remained under treatment for more than three weeks, a totally inadequate period for the production of any permanent benefit. The general condition was bad in 1, fair in 3 and good in 1. Complete ankylosis was not present in any of them; partial ankylosis was present in 1. More or less pain was constantly present in 3, present on manipulation or functionation only in 2. All were partially incapacitated for the performance of their ordinary duties.

SUMMARY.

A practical, easily comprehensible summary of the results obtained in these 51 cases, then, would be as follows:

Out of 24 patients who were totally incapacitated for the performance of their daily duties, 6 were restored to a condition of unimpaired usefulness, 3 to a condition of but slightly impaired usefulness, and 8 of the remainder discontinued treatment prematurely. Out of the 27 who were partially incapacitated, 7 were restored to unimpaired usefulness, 4 to but slightly impaired usefulness, and of the remainder 14 discontinued treatment prematurely. Out of 36 patients who were suffering constantly from pain, 10 were relieved entirely; in 12 pain was relieved to such an extent as to be troublesome only occasionally, the patients' lives being thereby rendered comparatively comfortable, and 11 of the remainder discontinued treatment prematurely. Of 15 cases in which pain was present only on movement, 5 were relieved entirely, 3 were greatly relieved, and of the remainder 6 discontinued treatment prematurely. Of 11 cases in which complete ankylosis of one or more joints was present, complete relief of such ankylosis was obtained in one or more joints in 2, partial relief in 4, and 5 discontinued treatment prematurely; of 25 cases in which partial ankylosis of one or more joints was present, such ankylosis was completely relieved in one or more joints in 13, partially relieved in 12, and of these 11 discontinued treatment prematurely. Of 27 cases wherein the general condition was bad when treatment was commenced, 10 were restored to normal health, 12 were greatly improved; of 19 cases wherein the general condition was fair only, 5 were restored to normal, and 8 were greatly benefited.

CONCLUSIONS.

In conclusion, although there is nothing particularly brilliant about the above-described results, yet they indicate that the prognosis of arthritis deformans is rendered much less gloomy by the advent of the later therapeutic methods, more especially when the large proportion of patients who discontinued treatment prematurely., viz., 28, is taken into consideration, and that the unfortunate victims of this distressing malady need no longer "leave all hope behind," even after they have entered far within the portals of its influence.

DISCUSSION

ON PAPERS BY DRS. M'CRAE, WALSH AND SKINNER.

DR. JOEL GOLDTHWAIT, Boston.—All who have kept in touch with this subject in the past must be conscious that much progress is being made in this class of disease. There are already too many, but the nomenclature used is unimportant provided we understand what we mean by the terms. Under arthritis deformans there are not only the two types Dr. McCrae spoke of, the atrophic and the hypertrophic, but also the infectious type. This type may be due to many different organisms, but the essential pathologic features are the same and differ widely from the pathologic lesions seen in the atrophic or the hypertrophic types. At times it is practically impossible at first glance clinically to differentiate this type from the others. With the radiograph or by incision it can be readily differentiated and it belongs to a type which must be considered when arthritis deformans is mentioned. Still's disease is distinctly the infectious type and may be met with in childhood and in adults. As to heredity, I believe there is a predisposition in much the same way that there is an hereditary predisposition to tuberculosis. If the resisting power of the pulmonary tract is weakened then the patient is more susceptible to pulmonary tuberculosis; and much the same condition exists in the joints. It should be remembered that two types of the disease may be present in the same individual and also that they develop at different times. I have never seen the atrophic superimposed on the hypertrophic. I have seen in two instances the atrophic develop years after the hypertrophic had been present. The patient appreciated the difference. We have different degrees of severity of these diseases the same as we have a pneumonia. As to the terms monarticular and polyarticular arthritis deformans, I wish they could be given up. Either type may be monarticular or polyarticular.

DR. FERD. C. VALENTINE, New York City—Dr. McCrae mentioned the gonococcus as an etiologic factor in arthritis deformans. Dr. Walsh said that arthritis deformans was more frequent in women than in men. This emphasizes, it seems to me, the fact that the gonococcus will invade the female more rapidly and be more destructive to her organs and, via the circulation, produce metastatic results more readily than in men. It appears not unlikely that some of these cases of arthritis deformans may be gonorrheal in origin and greater attention should be given to this etiologic element than has been hitherto.

DR. ALLEN A. JONES, Buffalo, N. Y.—Dr. McCrae took up beautifully the classification of these joint affections, but the tendency to throw out wholly and absolutely the term chronic rheumatism should be considered for a moment. I do not think we are in a position to throw out the term chronic rheumatism until we have demonstrated positively either a specific cause of acute rheumatism of the articular form, or a specific cause for both acute articular rheumatism and arthritis deformans. We see many instances of disease which may be either acute or chronic. Tuberculous manifestations may be acute or chronic, as may be malaria, etc. How are we to differentiate between the joint affections that may be so-called rheumatic, i. e., distinctly associated with causes undiscovered, or the possible manifestations of the disease which is a clinical entity known as arthritis deformans?

DR. DELANCEY ROCHESTER, Buffalo, N. Y.—The treatment of chronic cases by the electrical apparatus described is unquestionably valuable in cases where it can be used, but the vast majority of physicians have no such apparatus at hand and no facilities for using it; still, I think we can get as good results by carefully watching and handling these patients. The functions of the skin should be stimulated and I believe as good results can be obtained by the hot air, not with so high a temperature as described, but as used in the cabinet; we should be careful in the use of this procedure and follow it with

friction to the skin. Furthermore, good results can be obtained by carefully administered massage and movements of the joints in the older cases. The local applications of hot air by means of the Kelly heater is particularly beneficial in relieving local pains. With regard to the diet, we have been told that cases require forced feeding and that they should be kept in bed. A great many cases occur in stout people and any considerable amount of nutrition is not wanted. One should get rid of the excess of fat, particularly about the abdomen in women; here sweats and massage are of value. Keep the bowels open by saline waters. Sweets should be excluded and a minimum amount of starch should be permitted. Fresh green vegetables containing iron should be freely allowed, and fresh fruit and fresh meats in moderation.

Dr. Thomas McCrae, Baltimore—I do not think that the gonococcus is an etiologic factor, but it may influence the condition as any intercurrent infection. If a patient has arthritis deformans and then contracts gonorrhea it may light up the joint symptoms. I think the use of the term "chronic rheumatism" is unfortunate because there are no set conditions associated with it. I believe the only condition with which this term should be associated is that in which the "rheumatic manifestations" persist for a long time. For instance, a child may have an arthritis with endocarditis and pericarditis, skin lesions, fibroid nodules, etc., perhaps lasting for years, and this may be called a chronic rheumatism. All chronic manifestations in joints should not be termed chronic rheumatism. With regard to the organisms described, they can not as yet be regarded as proved causal factors. That described by Poynton and Paine as causing arthritis in a rabbit was a diplococcus. Dr. Goldthwait has divided the disease into three groups—atrophic, hypertrophic and infective. I feel that they are probably all infective in type, and so I do not make a separate group under the heading "infective." A matter that should be strongly emphasized is that this disease has nothing to do with uric acid. Many patients are told that the disease is due to uric acid and are put on restricted diet with most unfortunate results. I think we should do our best to get rid of this foolish idea in the minds of many of the profession. There is a hopeful side in treatment that has been impressed on me by the number of cases in which the disease occurred years before and the patients had practically regained good health and function.

Dr. James J. Walsh, New York City—Uric acid has long been a shibboleth. It was supposed to have solved many problems, and at last it is about to be abandoned. I have seen recently the wife and daughter of a physician, each suffering from the painful condition at the base of the big toe so often noted in connection with flatfoot, who had been carefully dieting themselves for gout for more than a year. One result of the mixing of rheumatism and arthritis deformans is the free use of the salicylates, which always do more harm than good since they destroy red blood corpuscles, make the patient more anemic and do not relieve pain. It has been objected that until the microbic cause of rheumatism and arthritis deformans is known, there is no justification in entirely separating the diseases. At the beginning of the nineteenth century there was in the measles and scarlet fever group of diseases, as yet undifferentiated from one another, what have now come to be recognized as four distinct diseases. Of none of these is the microbic cause known. Surely no one would say that there is no justification for their clinical separation.

Dr. Clarence E. Skinner, New Haven, Conn.—The local dry hot-air treatment was used in nearly all the series of fifty-one cases that I have reported, and in only one did any marked benefit follow the application, and in this we were obliged to apply the body dry hot-air application, in addition to the local, before we succeeded in getting our final curative results. This poor showing for the local application has led us to abandon it almost entirely as a measure of treatment in this disease. We sometimes use it as a palliative measure for the temporary relief of pain, and it is very rarely that we have been able to obtain even this. We have never seen any benefit follow the use of low degrees of heat, and, on the contrary, have not infrequently seen positive harm in the way of increased debility result therefrom. In our experience it has been the stimulating influence of the body dry hot-air treatment on the central nervous system and the trophic functions that has been useful, and to obtain this it has been necessary to use the higher degrees of heat. As a possible explanation of the different results of Dr. Rochester and myself as regards the use of the local dry hot-air application, and the low degree of heat, I will say that all of my cases were chronic and very severe, which necessitated their being treated in the sanitarium. Dr. Rochester's cases may have been milder in character. I do not believe that moderately severe and well-established cases of arthritis deformans can be well treated at home. It is necessary for them to be cared for in sanitaria or other properly equipped institutions where their habits can be thoroughly regulated and where they can receive proper administration of all the physical therapeutics which to-day constitute almost our only reliance for the combating of this disease.

AUTOPLASTIC SUTURES IN HERNIA AND OTHER DIASTASES.

FINAL REPORT.*

LEWIS L. McARTHUR, M.D.
CHICAGO.

Three years ago it was my privilege to present to this Section a preliminary report of a new procedure in suturing hernia. Since that time I have been continuously using the method then described, until the cases

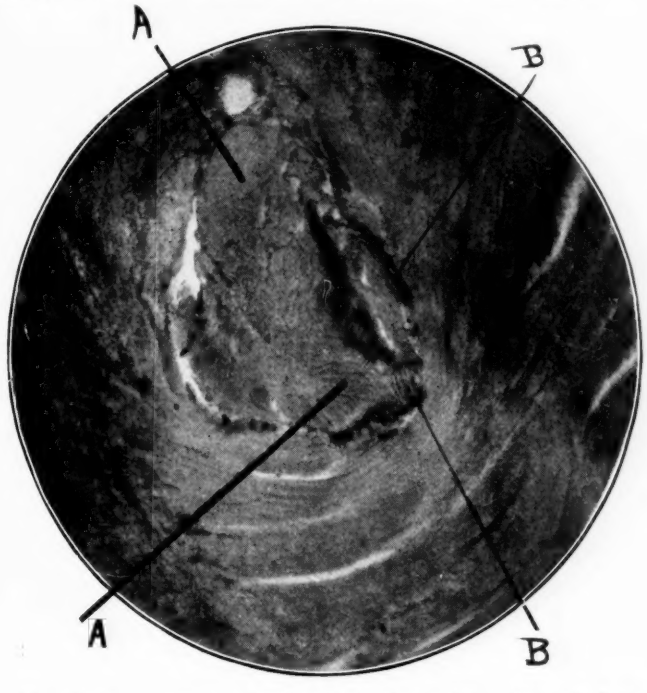

Fig. 1.—Cross section (×35) auto-tendon suture. Dog, 5 days after operation. A A. Auto-tendon suture. B B. Sections of fiber of silk thread inserted with tendon for identification. Note retention of normal characteristics of living suture after 5 days and the fact that there is much more reaction as shown by round-celled infiltration about the silk fiber (foreign body) than at borders of the living suture.

operated on have become sufficient in number and the time elapsed long enough to form conclusions as to its value. The results of these three years' work I now ask the opportunity of presenting.

Before doing this, however, let me epitomize the main

* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Surgery and Anatomy, and approved for publication by the Executive Committee: Drs. DeForest Willard, Charles A. Powers and J. E. Moore.

features of the former communication and describe in brief the only differences necessary in the technic of hernia work when done with living sutures. I demonstrated at that time (1) that it was an easy matter to split the tendinous aponeurosis of the external oblique from the external ring to the commencement of its

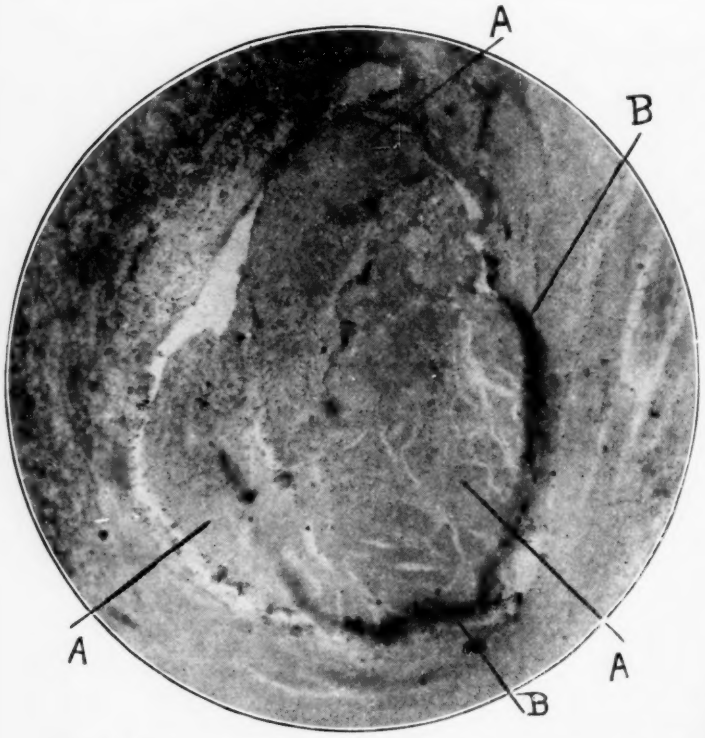

Fig. 2.—Cross section similar to Figure 1, but magnified 70 diameters. A A A. Cross section auto-tendon suture. B B. Silk-thread fiber.

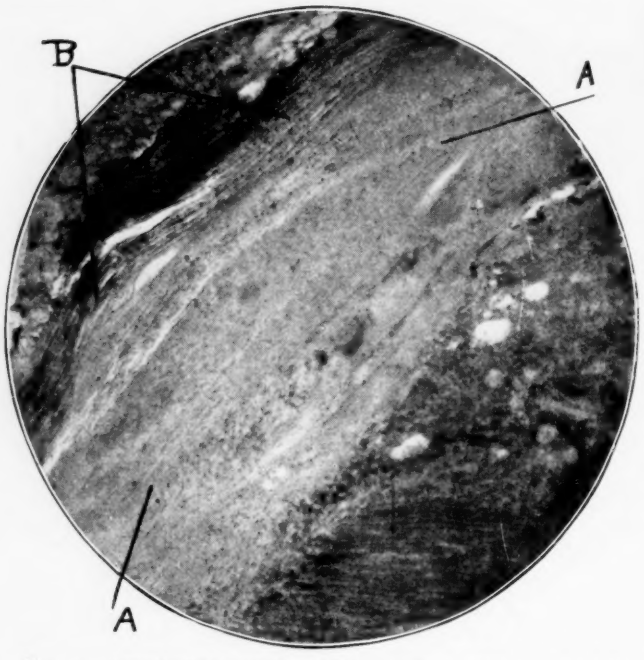

Fig. 3.—Longitudinal section (×35). Dog, 5 days. A A. Auto-tendon suture. B. Silk identification suture.

muscle belly, by simply lengthening the usual splitting of this structure. (2) From the cut edges of this, by carefully paralleling its fibers, that one could secure two strips of living tendon averaging 4 to 5 inches in length with which the structures to be apposed can be sutured. (3) That the use of such sutures can be adapted to any of the recognized procedures for the radical cure of hernia. (4) That unlike any of the other numerous plastic operations advanced, the material lies directly in the wound itself instead of requiring extensive dissections or abnormal displacement of important structures.

Operators have, in the past ten years, by a process of gradual evolution arrived at certain definite conclusions regarding the cure of hernia. Most surgeons agree that in the typical operation certain structures are to be sutured to the inner shelving edge of Poupart's ligament, with variations in the order of attachment of these structures and their relations to the cord. I wish to be understood as championing no new hernia method, but I do advocate the utilization of strips of living tendon as the suture material in whatever operative technic the surgeon prefers, since it is equally adaptable to a Bassini, an Andrews-Girard, a McEwen or a Halstead operation.

TECHNIC.

The skin and fat having been cut by the usual incision exposing the external ring, the latter is prolonged

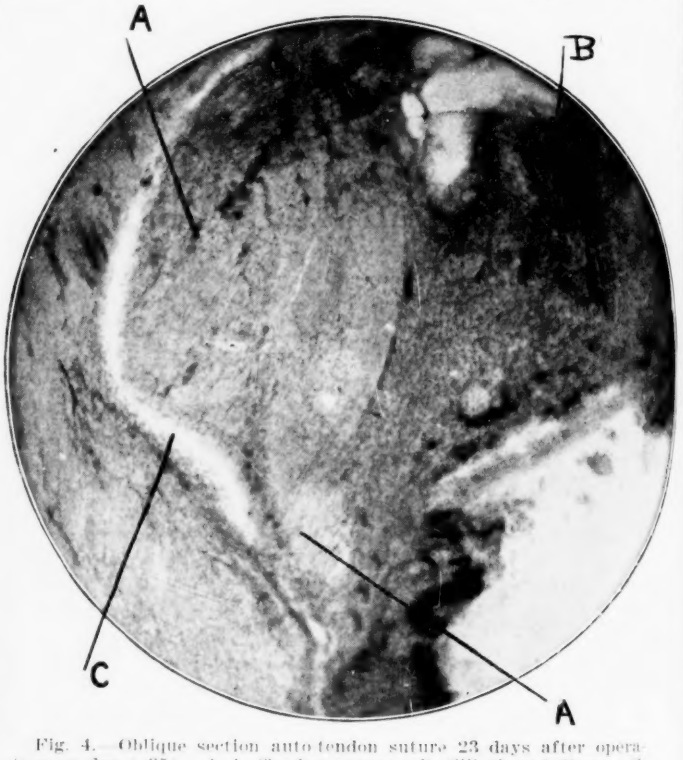

Fig. 4.—Oblique section auto-tendon suture 23 days after operation on dog (×35). A A. Tendon suture. B. Silk-thread fibers. C. Line of cleavage between tendon suture and the ext. oblique fascia showing the retention of the individuality of the living suture and the small amount of surrounding infiltration as compared with the foreign body (silk).

upward in the usual manner, but to its commencing muscular insertion. Special care is taken to parallel the tendinous fibers. This divides the aponeurosis into an external and internal flap, each of which can be readily separated from its contact with the internal oblique. The sac having been treated as the operator deems best, a bundle of those white fibers which enter into the formation of the internal pillar of the ring are then split off, from below upward, from the edge of the internal flap of the aponeurosis of the external oblique, quite up to their termination in the muscle belly. Above they are cut loose, but left attached to the pubic spine below. This strip should vary fro one-eighth to three-sixteenths of an inch, according to the develop-

ment of the tendon. An identically similar strip, beginning in the external pillar of the ring, is taken from the outer flap of the external oblique. At this stage the suturing is to be done. The operation is completed, according to the choice of the operator, by the Bassini, an Andrews imbrication or Girard method using these strips as suture material for a running stitch. As a convenient means of handling, and for the purpose of avoiding infecting the graft suture, a needle threaded with No. 3 silk is tied by a single knot to its free end, and by it the tendon graft is drawn through the tissues to be united. Using the graft ending in the internal pillar for the first or deep suture, the surgeon draws the internal oblique and transversalis down to the inner aspect of Poupart's ligament as shown in the drawing, suiting his convictions as to raising or not the cord. If raising the cord (Andrews), then no opening is left below for an external ring; if not raising the cord (Ferguson, Bassini), then the first stitch determines the fit of the external ring around it. The edges of the external oblique are then sutured with a running stitch, using the graft made from an external pillar of the

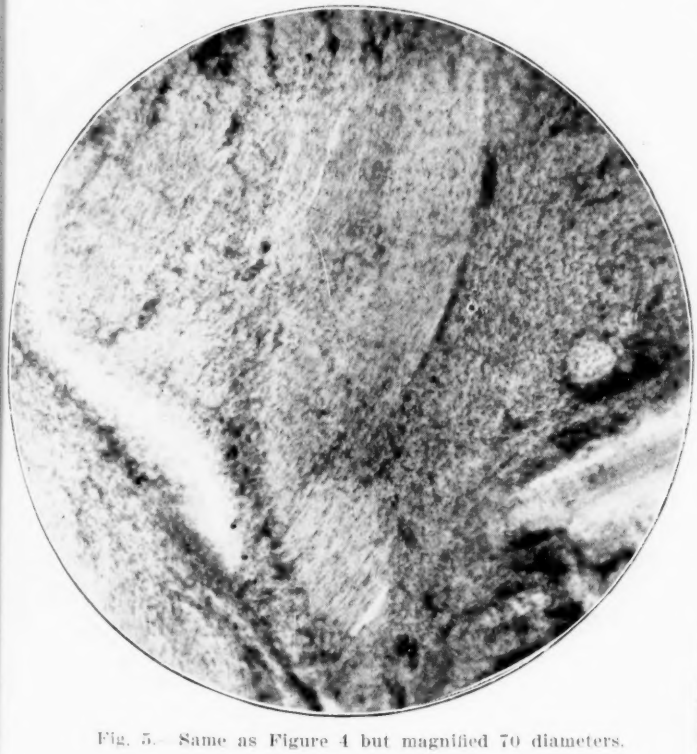

Fig. 5.—Same as Figure 4 but magnified 70 diameters.

ring when a Bassini is being done; to the surface of the external oblique when an Andrews or Girard is done. The ends of the suture strips can be fixed by a simple knot in it, or by one or two stitches through and back as a tailor fixes his thread, or as shown in the specimen by a fine catgut stitch with the graft end caught in its knot. The deep suture penetrates the external oblique for final fixation, after the new internal ring has been made. The skin and fat are then closed as the surgeon prefers.

Since making my preliminary report of 12 cases on this subject, I have had two or three herniæ a month, until the number I have operated on has reached a total of 93 consecutive cases; on 85 patients, of whom 82 were males and 3 females, the youngest 6 months, the oldest 78 years. Eight cases were bilateral. While this number is small compared with the statistics of many other operators, it still furnishes something of an idea as to what can be done with the procedure. These cases have been largely done at St. Luke's and Michael Reese hospitals, and include both private and ward patients. Among the total number of cases, two were

Fig. 6.—Cross section silk thread after 23 days. Dog. Note marked infiltration about and within thread. B B. Cross section thread.

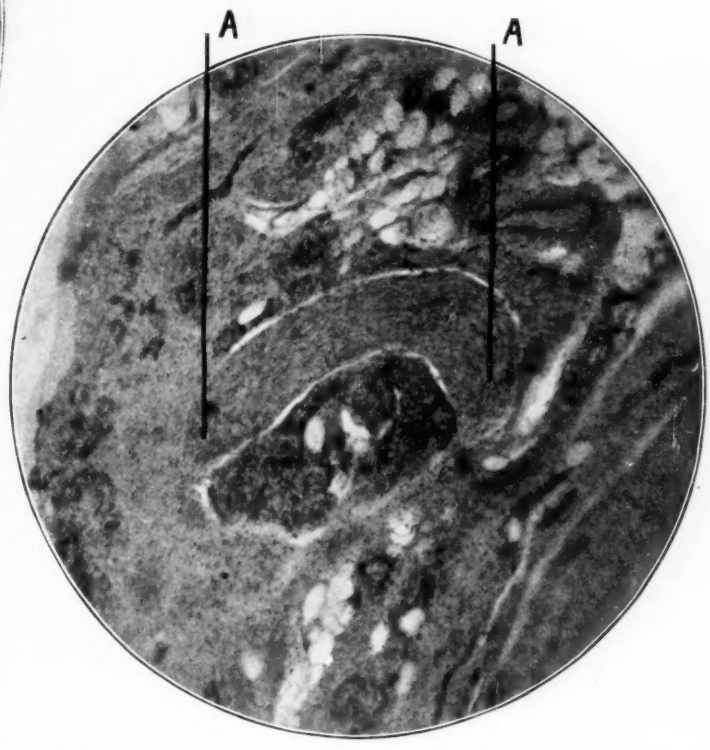

Fig. 7.—Human specimen year after operation. (Patient dying of subsequent appendicitis.) A A. Cross section auto-tendon suture.

associated with suppuration. One, an old man 60 years of age, with immense scrotal hernia, on whom I made a splitting of the sac into four strips after the proposal of Duplay Cazin, tying opposite strips over one another

instead of excising the sac, and used the resulting mass as a pad behind the internal ring. The operation was then completed by the Bassini method, using the graft sutures. A primary union was secured and patient discharged at the end of sixteen days. Ten days later he returned to hospital with an indurated mass just below the middle of Poupart's ligament, which was incised, pus escaping. This healed within a week without disturbance to the hernia, and patient reports himself a year afterward well and without recurrence. I am inclined to believe a mistake was made in treatment of the sac. The second case was an evident stitch abscess, seen and cared for by my colleague during my absence from the city. Removal of silkworm-gut stitch and separation of skin edge at one point was all that was necessary. Patient made a good recovery, and has no recurrence of hernia. Twice there has occurred a hematoma—once in the scrotal pouch, once directly beneath the incision—requiring the letting out of blood clots by removal of one or two stitches. In these cases, too, no interference with the ultimate success of the operation was observed. In the class of cases operated on in a charity hospital it is difficult to trace them for three consecutive years, but insofar as I have been able I have done so, by mail or messenger, or personal examination, and have not yet found among them a recurrence sutured by this method. I have, through the kindness of Dr. Greensfelder, secured the scar of a hernia case operated on more than a year previously, the patient having died with a general peritonitis from a gangrenous appendix. Sections of this I believe show segments of the grafts passing in a curved manner through it, as a living fibrous tissue (See the accompanying microphotographs.)

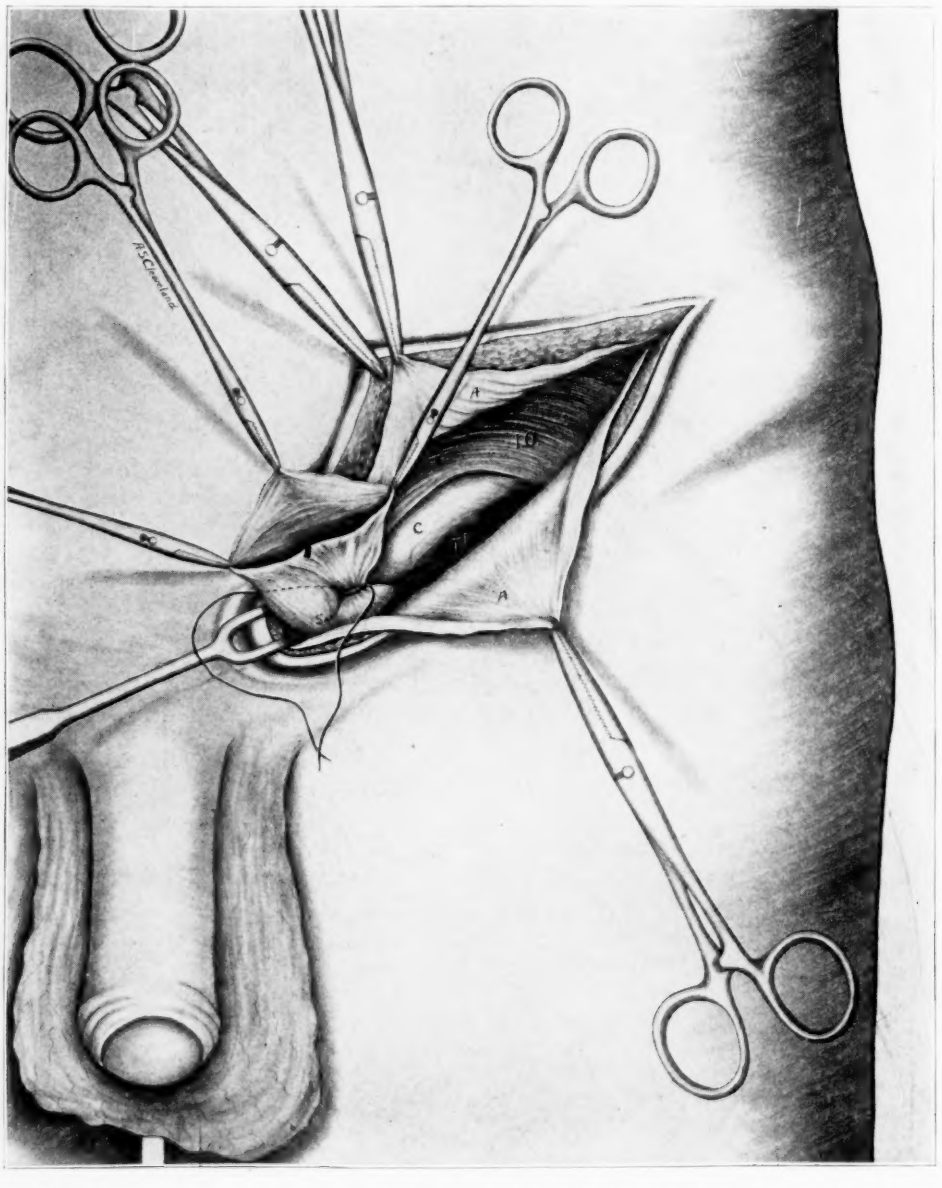

Fig. 8.—Aponeurosis of external oblique. I. O. Internal oblique. C. Cord. T. F. Transversalis fascia.

Caution should be used, I have found, to cut the strips from below upward, as the fibers often curve outward around the external ring, and if followed from above downward would occasionally end in the upper segment of the ring. The inner surface of the aponeurosis shows distinctly the tendinous fibers, so by everting the edge one can parallel them best.

In this group of cases I have naturally included op-

erations done by all the usual methods, because desirous of trying its applicability to them, but the majority have been after the Andrews-Girard or Bassini.

When the hernial aperture is particularly large, the bringing down of the inner flap of the external oblique to Poupart's without raising the cord, permits the using of an unusually strong strip of aponeurosis, as the subsequent imbrication does not require the creation of a new canal between the flaps.

Whatever the method of operation, its success is dependent on the formation of a cicatricial connective tissue between the apposed surfaces, retaining them where placed. Could we, in addition, incorporate in such a cicatrix such white inelastic tissue as these tendons present, especially interwoven as a running suture is, then we can certainly feel more confident of its permanency and unyielding character. My former paper concluded as does this: "It is logical that if the identical technic is followed, using these living strips as aseptic animal sutures are used, and a primary union result, that if they die and be absorbed they accomplish all that the foreign material does, while if they live (as experiment seems to prove), they remain to offer permanent resistance to future stretching.

I wish to acknowledge the good work done by Dr. E. L. Dagg in making the pathologic sections and of Mr. H. D. Skelton in preparing the microphotographs.

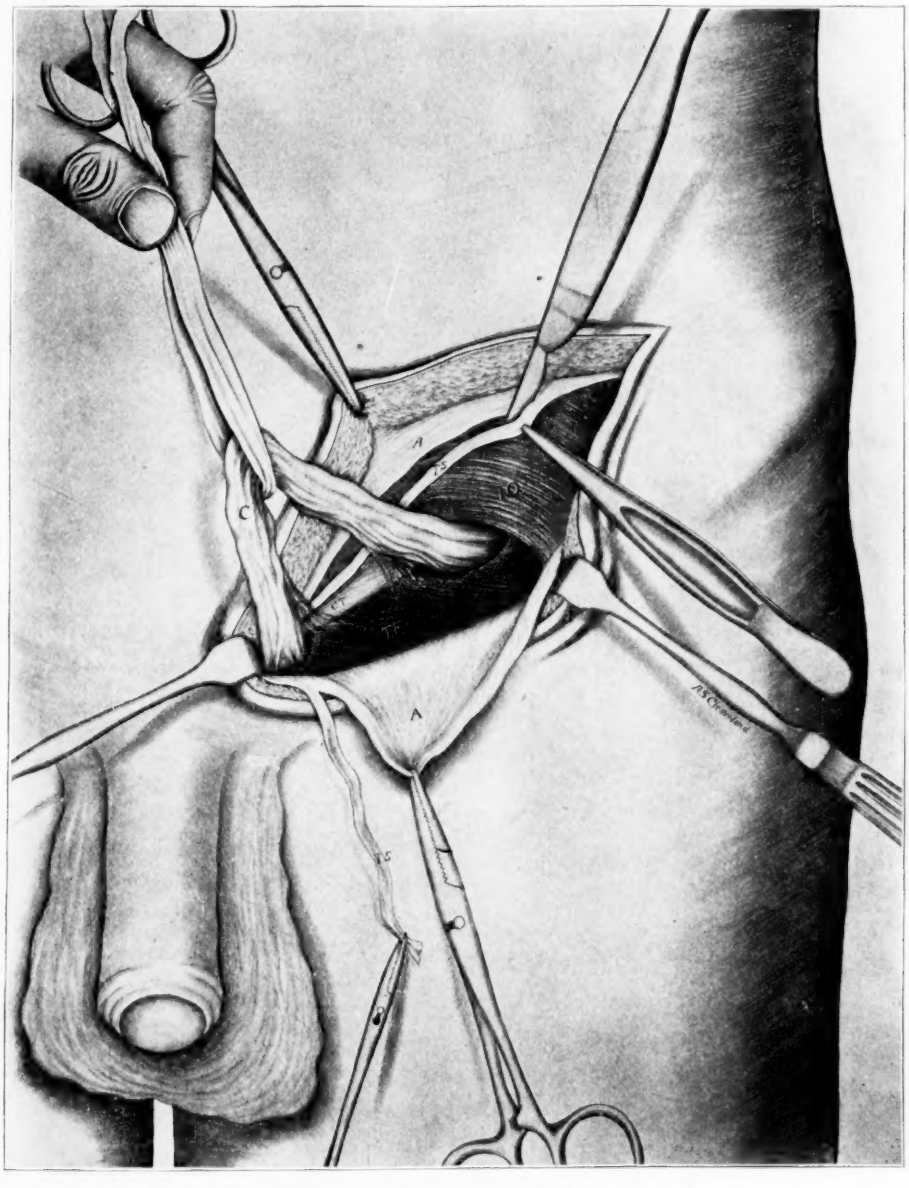

Fig. 9.—A. Aponeurosis of external oblique. T. S. Tendon suture. C. Cord. I. O. Internal oblique. C. T. Conjoined tendon. T. F. Tranversalis fascia.

DISCUSSION

ON PAPERS BY DRS. D. N. EISENDRATH* AND L. L. M'ARTHUR.

Dr. W. B. Coley, New York City—I have been interested in Dr. McArthur's method of autoplastic suture in hernia ever since it was brought out a few years ago, although I have never made use of it. A few years ago the indications for the employment of such a method were much greater than they are at the present day, when we have abundant proof of our ability to perfectly sterilize ordinary absorbable sutures, e. g., catgut or kangaroo tendon. Of the disadvantages of non-absorbable sutures in hernia, in showing a tendency to late sinus formation, I have given numerous examples. I have

* The paper by Dr. Eisendrath appeared in The Journal, Sept. 10, 1904.

found that the absorbable suture of chromicized kangaroo tendon remains sufficiently long in the tissues to effect a permanent cure; and this suture will cause no trouble unless it has been chromicized too long. Since I began using rubber gloves as a routine measure, in 1897, I have had less than 1 per cent. of suppurations, and the percentage of relapses following operation has been so extremely small that I think in the Bassini method, with buried absorbable sutures, we have practically an ideal method, without the more complicated suture of McArthur. At the same time, Dr. McArthur has shown that it is possible to use the autoplastic suture with excellent results. My chief objections to it are: (1) that equally good results can be obtained by a simpler technic; (2) that in certain cases where the aponeurosis is more or less defective, its application will be unsatisfactory.

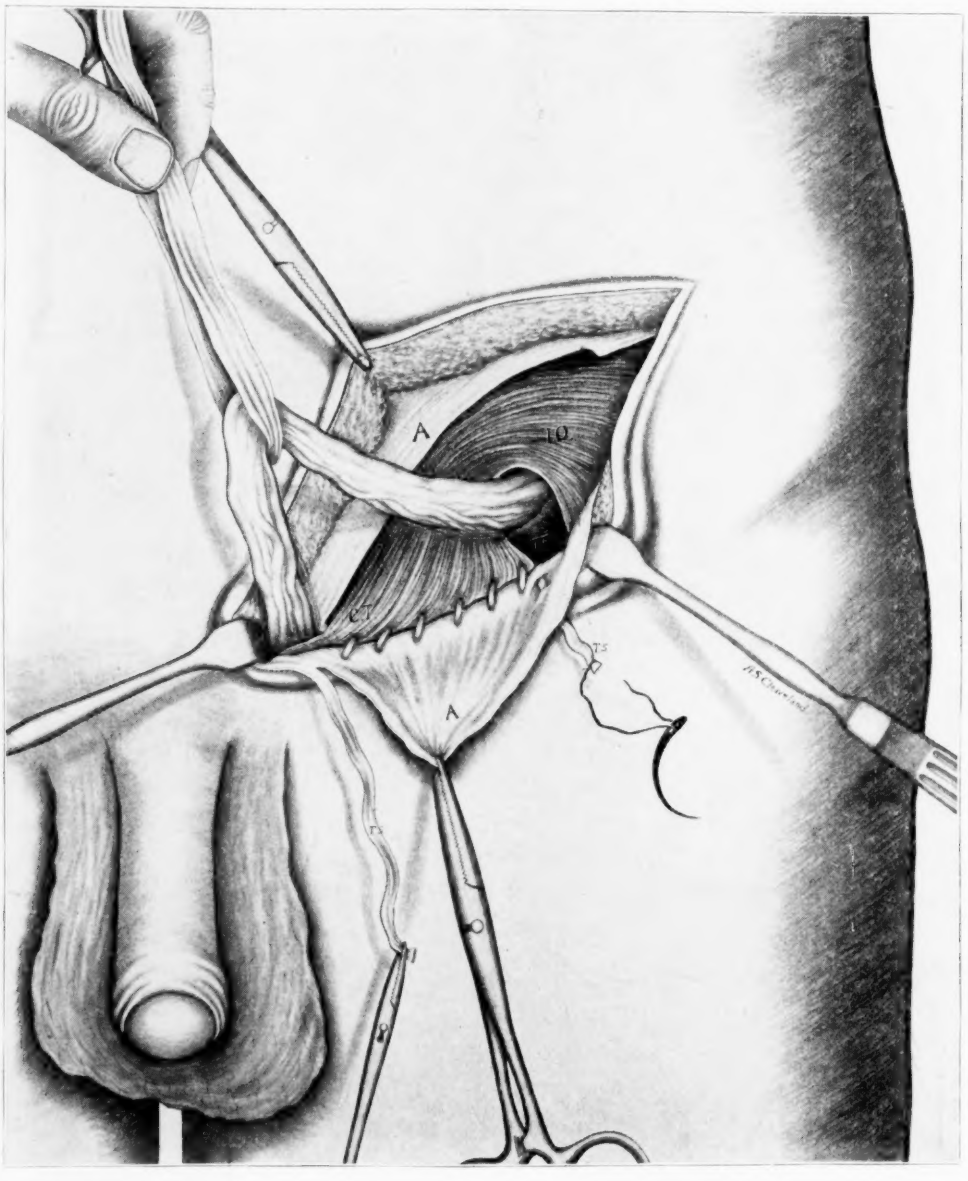

Fig. 10.—A. Aponeurosis of external oblique. I. O. Internal oblique. C. T. Conjoined tendon. T. S. Tendon suture.

DR. E. W. ANDREWS, Chicago—I call this operation the imbrication or lap-joint method. It was first performed about eleven years ago. The theory of the operation is the doubling of the thickness of the layers of the abdominal wall by shingling or overlapping so that they lie like the scales of a fish. In a paper published in 1895 I showed a sagittal section of the aponeurotic layers of the abdominal wall illustrating how it was possible to do the operation in four or five different ways, behind or in front of the cord. I am fond of doing this same lapping operation in closing the rectus sheath after celiotomy, and I used it long ago in closing the ring in ventral and umbilical hernia. This step was referred to as mine by Dr. Mayo in his original paper on closing umbilical hernia for radical cure. He has, however, added a more valuable feature by overlapping from above downward, making a transverse line. It was one of the most agreeable surprises I ever had after Dr. McArthur had worked on his method to look through the microscope and see in these specimens, which he had cut, the beautifully demonstrated circular line of fibrous tissue evidently still living, and to observe that there was a true tissue growth in this autoplastic stitch. We have here a new principle. If we could take strips of tissue for stitches and have them live it would be a strong help in strengthening weak points in various operations. I am sure it will interest every one here to examine the specimen as shown under the microscope, showing clearly what he claims, namely, a new living connective tissue band formed by the suture. My operation has been done over 2,000 times in Chicago and the west. Some of the cases are of over ten years' standing. The method in one of its forms is given as "Girard's operation" in v. Mikulicz and Bruns' last edition. This is an oversight, as Girard did

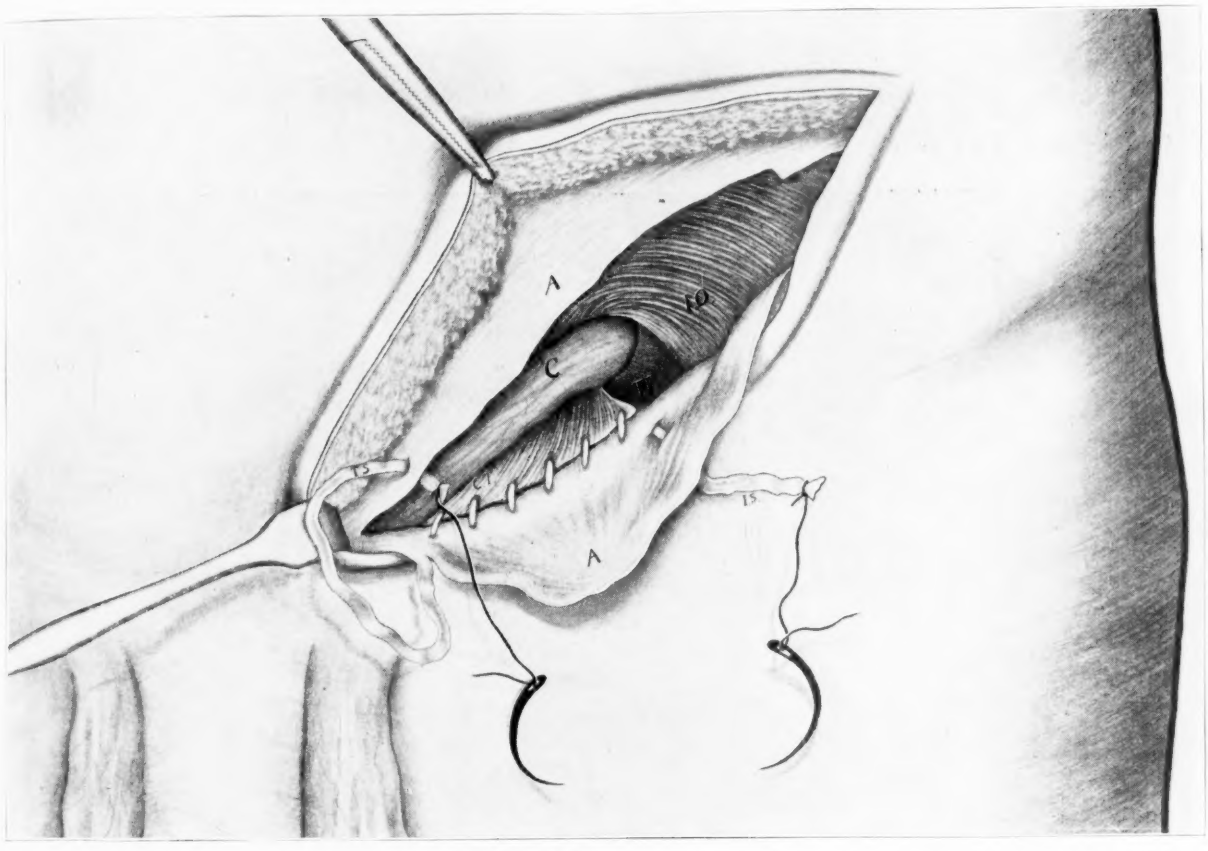

Fig. 11.—A. Aponeurosis of external oblique. I. O. Int ernal oblique. T. F. Transversalis fascia. C. Cord. C. T. Con joined tendon. T. S. Tendon suture.

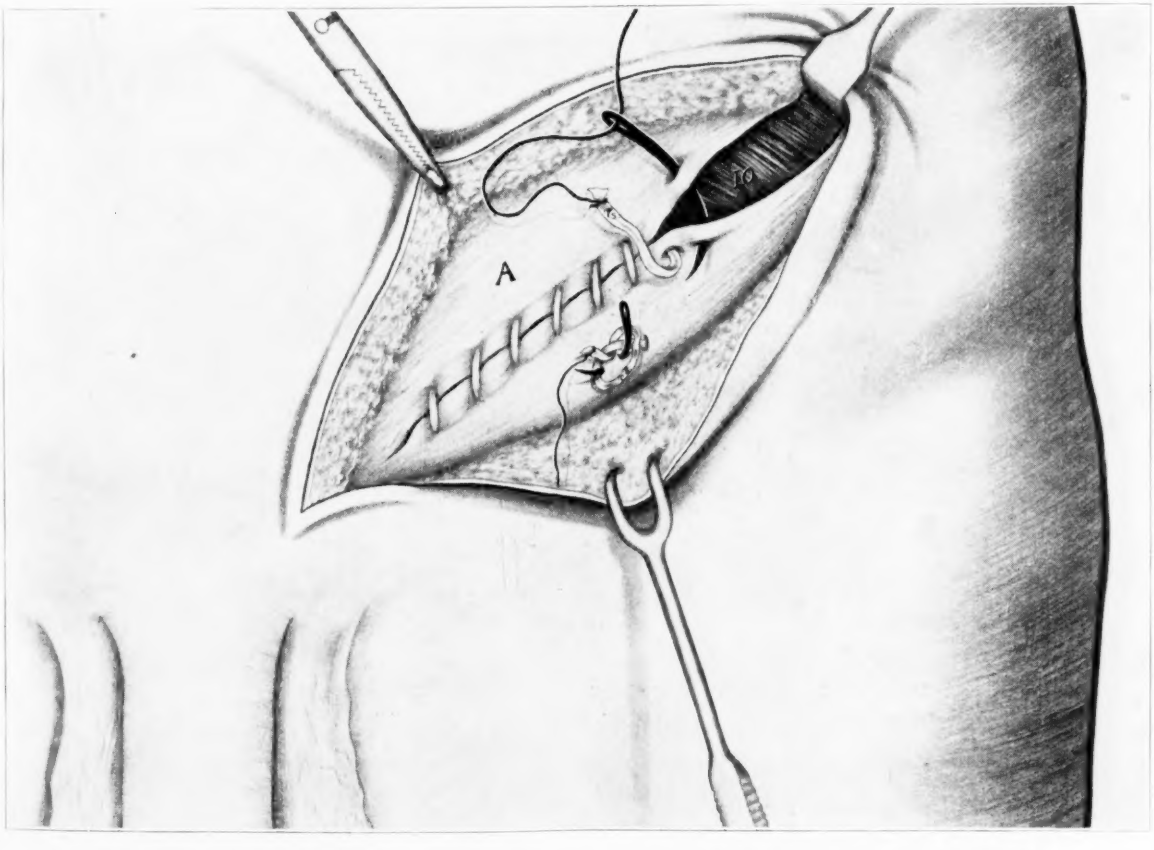

Fig. 12.—A. Aponeurosis of external oblique. I. O. Internai oblique. T. S. Tendon suture.

not publish it until seven years after I had done so. I believe it is to be corrected in the forthcoming edition of this great work.

DR. C. F. STOKES, U. S. Navy, Washington, D. C.—For many years I have been interested in the question of herniotomy in the Navy and was instrumental in establishing the operation for the radical cure as a routine practice in the hospitals of the service. I have always taken the stand that the predisposition to hernia is congenital, exists prior to enlistment, and that the exciting cause, so-called, is secondary, and therefore, patients who refuse operative treatment and are discharged from the naval service should not be entitled to a pension. The Bassini operation, as modified by Drs. Bull and Coley, has been my choice, and the results have been very satisfactory. Having only recently completed a cruise at sea, I have had no opportunity to make use of the newer methods, but after what I have heard this morning I shall give them a trial in suitable cases.

DR. J. C. BLOODGOOD, Baltimore—It must be very satisfactory to Dr. Andrews to know that many surgeons have recently adopted his method of the imbricated suture. These surgeons started with, perhaps, different ideas and certainly with different methods, and in their endeavor to perfect their results, have, in the great majority of cases, in one way or another, both with and without the knowledge of Dr. Andrews' previous publications, gradually come to overlapping the different layers of the abdominal wall exposed for the dissection and removal of the hernial sac. It seems to me that it is a greater

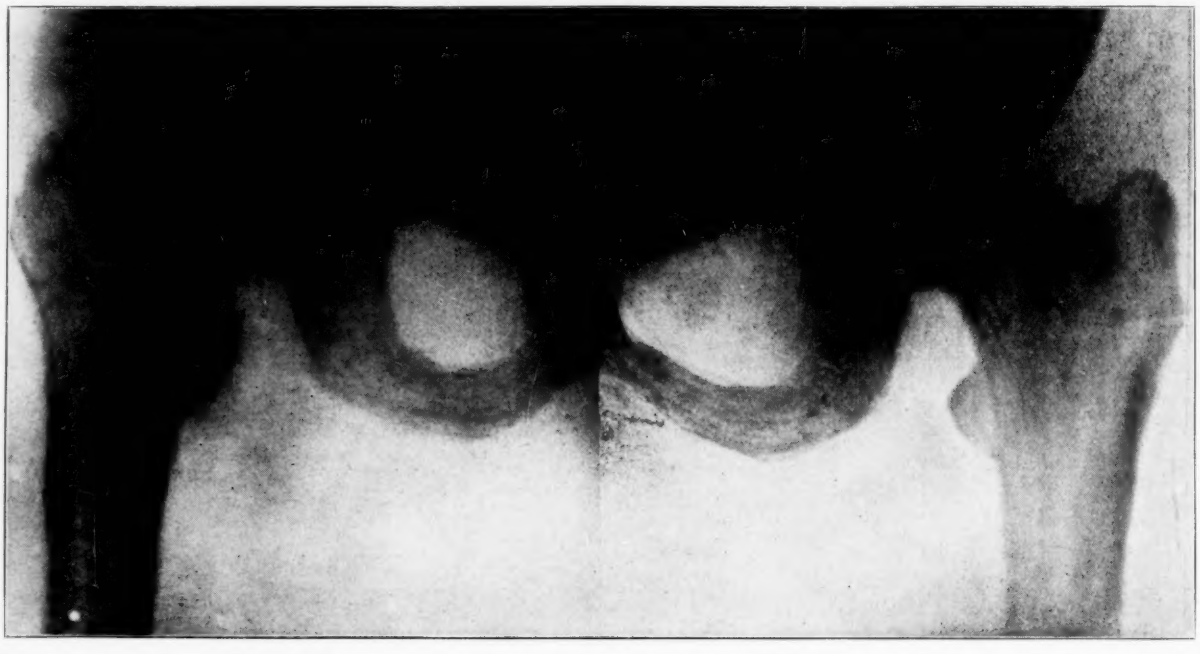

Fig. 2.—Case 1. Woman, 76 years old. Impacted fracture of right femoral neck, as outlined. Angle of neck to shaft, 131 degrees; normal angle (left leg) neck to shaft, 135 degrees. Perfect result. Woman walks well. (Illustrating paper of Dr. Wills, see page 1048.)

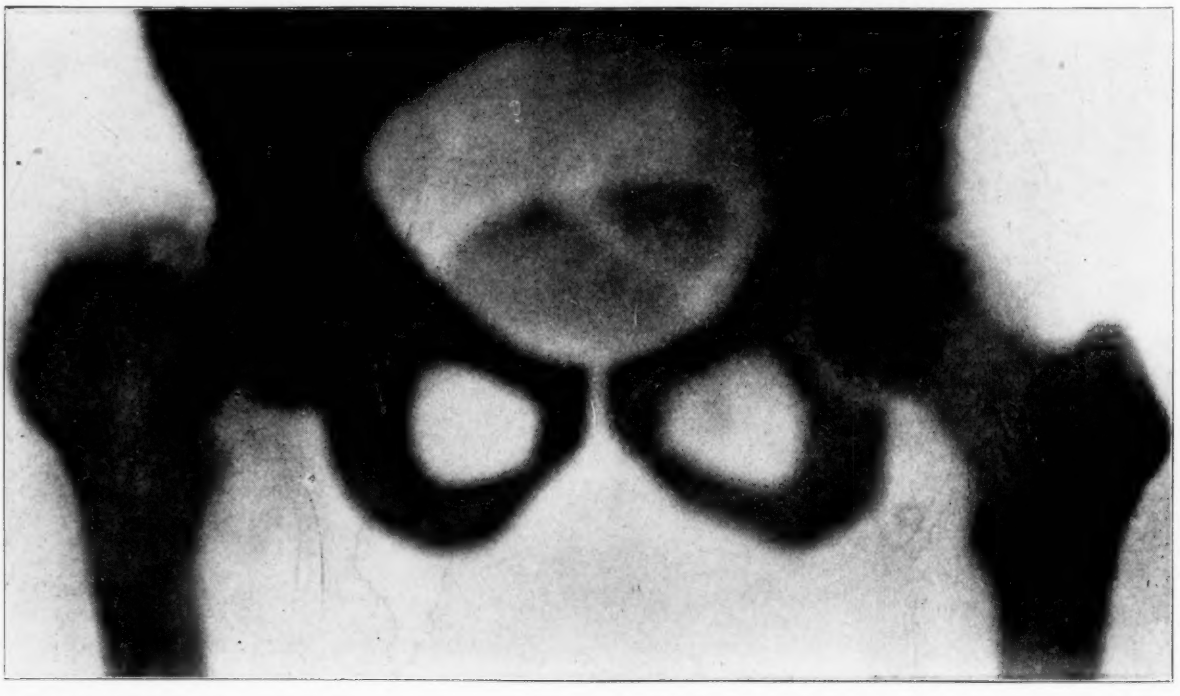

Fig. 3.—Case 2. Impacted or "pegged" fracture of neck of right femur—"intracapsular" of older writers. Leg one-half inch short. Excellent result. (Illustrating paper of Dr. Wills, see page 1048.)

compliment to the originator of a method to know that others have adopted his method not by imitation, but by a natural process in the development of the operative technic. Dr. Eisendrath has given us a splendid demonstration of what can be accomplished with dry goods to demonstrate the operation for hernia. Dr. McArthur undoubtedly holds a peculiar position in the field of the operative treatment of hernia. We might designate him as an international peace commissioner, because McArthur with his human suture apparently accomplishes a cure with any method. The test of an operation for hernia is the test of time. Since my extensive study of the ultimate results after operations for hernia in the Johns Hopkins Hospital in 1899, recent experience has confirmed the conclusions then made. Suppuration in the past has been one of the chief factors of a recurrence. Improved technic has practically excluded this factor. It is unnecessary to transplant the cord. When the accompanying larger bundle of veins is varicose they should be excised, but only in adults; in children the veins should never be excised. In excising the sac the vas deferens and its accompanying vessels should be handled with the greatest care and not separated from the posterior wall of the inguinal canal. The most important factor is the separation and the suture of the internal oblique muscle to Poupart's ligament, strengthened by the suture of the divided aponeurosis of the external oblique. There are a few instances in which it will be necessary to expose, transplant and suture the belly of the rectus muscle. In one group this is indicated because the conjoined tendon is narrow, weak or obliterated (about 5 per cent. of the cases). In such cases it seems impossible to utilize the internal oblique muscle in as satisfactory a way as the rectus, to cover the lower third of Hesselbach's triangle, which in the majority of cases is occupied by the wide and strong conjoined tendon. In a second group the internal oblique muscle is situated so high or has undergone such an amount of atrophy that it is not of sufficient value for suture purposes; here again the rectus should be used. Imbrication is not essential when the internal oblique muscle is strong and the conjoined tendon wide and firm. Imbrication undoubtedly, more than any other factor, accomplishes a cure when the muscle and aponeuroses are attenuated. Imbrication in all cases allows the use of finer suturing material.

DR. H. O. MARCY, Boston, Mass.—I am reminded of the statement of Dr. Oliver Wendell Holmes, who said that the finer dissections were like splitting wood, the more sticks you split the more you will have to split. This is true of the less important factors in inguinal hernia. We all agree on some points. First as to the sac which has been referred to; we agree that it should be removed in large, old hernias. There was a time when we argued that it could be utilized for a purpose, but we now agree that it should be eliminated. The cause of oblique inguinal hernia is usually found in congenital conditions, resulting in imperfect development of the structures which form the posterior wall of the canal and internal ring. Cloquet, who based his opinions on the results of his dissections of 500 subjects where hernia did not exist, found these structures so often defective that he described his so-called infundibular process of the peritoneum as normal anatomy. That no such process or pocket of peritoneum may remain in which intraabdominal contents can find lodgment, is the most important reason for the removal of the sac. Undue intraabdominal pressure on the internal ring necessarily deflects the opening downward, shortening and distending the canal until it may become a direct opening, or hole, in the abdominal wall. This is the more usual condition in cases which come to operation. Admitting the above undeniable conditions, the general problem is easily reduced to a single factor—restore the parts to normal conditions. Although generally anatomically described, these conditions have failed to receive due surgical emphasis as amply illustrated in the papers and present discussion. The inguinal canal traverses the abdominal wall so obliquely that the intraabdominal pressure is exerted at or about a right angle to its axis, compressing laterally to its walls. This is a well-known principle of mechanics. The only other important instance of which Nature makes physiologic use is the penetration of the ureter through the wall of the bladder, to prevent reflux of urine toward the kidney. How to restore the inguinal canal to its normal obliquity and thus deflect from it the intraabdominal pressure? This effected, it appeared to me that the "thousand year-old problem of surgery" would admit of easy solution. The parts must be reconstructed in a way made possible only by the use of buried absorbable sutures. Mr. Lister had taught me to ligate arteries cut short and buried in the structures—why not freely reconstruct the tissues by continuous sewing as the seamstress shapes clothing? This was seemingly so unwarrantable that I found it difficult to secure medical men to witness my early operations. My first published cases were in 1870, followed during the decade by a number of papers read before this Section. In 1881, in London, again in 1884, in Copenhagen, I presented elaborate papers on this subject before the International Medical Congress. These papers were prior to any reference to this method by any European or American writer. This was the first use of the buried absorbable suture, my best contribution to surgery. Little by little I broadened their use to every aseptic wound regardless of size, closing and sealing the wound without drainage. Thus reconstructed hernia is easily and permanently cured without danger to healthy individuals in all periods of life.

DR. ARTHUR D. BEVAN, Chicago—The operation for hernia has been very slowly evolved, but the majority of operators are now pretty well agreed. I have no operation. I am in a judicial position. I make an incision over the canal and open it from the internal to the external ring. I remove the entire sac if it is small, but if it is large simply that portion which is in the canal. No harm can come from the balance. I leave the cord in its normal position because there is more danger of injuring the cord if one elevates it. Three per cent. of injuries have occurred in my own work. I have never come to the imbrication method. It is called in literature the Girard operation. If there is a large opening, or if there is absence of the internal oblique and transversalis, the suggestion of using the sheath of the rectus and drawing it down through Poupart's ligament is an excellent scheme. We should more extensively use the method of local anesthesia. I use it in one-quarter of my cases and the results are most satisfactory. The suture material I am quite convinced is absorbable. There is no excuse to-day for using a non-absorbable suture. I have taken out so many silver wires that the evidence is so strong against the permanent suture acting as a permanent suture that the absorbable kind should be used.

DR. W. B. DE GARMO, New York City—I believe Dr. Eisendrath's method of teaching anatomy is a valuable advance. Dr. Andrews' operation in the treatment of hernia I look on also with favor. In all probability I shall not adopt the method as a routine practice because I have only had eight failures out of over 1,000 inguinal cases by the Bassini operation. We are all working in the same field with the same object. The vital points are to remove all foreign substances from the canal and close it thoroughly, at the same time restoring its obliquity.

DR. JOHN B. WALKER, New York City—The Bassini operation is the one which will give the largest number of successes.

DR. CHARLES LESTER LEONARD, Philadelphia—I wish to report a case of direct inguinal and oblique inguinal hernia on the same side in which the deep epigastric was just beneath the skin. After ligating the sacs separately I found that I had a ring to close which extended from the position of the external abdominal ring to the symphysis pubis. It involved the entire inguinal canal. In closing, the cord was displaced according to the Massini method, but instead of employing interrupted sutures to close the canal, two Macewen stitches were introduced. These held the free edge of the oblique and transversalis fascia beneath Poupart's ligament. The patient, a ship machinist, has been at his trade over a year and shows no signs of a recurrence of the hernia. The case is noteworthy because of the rare pathologic condition and the combination of the Bassini and Macewen methods.

DR. E. W. HOLMES, Philadelphia—There is no subject in anatomy more difficult for students than that of hernia, because of the diversity of names used for the same structures.

Our studies of comparative anatomy show us that muscular structures may later become fascial. Thus the levator ani muscle, now arising from "the white line," originally came in muscle from the iliac crest. Not pursuing the analogy too far, I have always found it of advantage in teaching to consider all the layers of the abdominal parietes as continuous with Poupart's ligament in its whole continuity; then the testes coming down carry each layer with them in turn; and so the hernias. Thus once learning the anterior abdominal wall, we have learned likewise the coverings of the hernias, direct and oblique, and the coats of the testes. In discussing the methods of radical cure not only at this meeting, but in our journals and in the text-books, with all due regard to the eminent men here and elsewhere who have given names to particular operations, it seems to me we are entirely too partisan. I approved of the remarks made by Dr. Marcy, because he talked to us like a philosopher, giving us the fundamental truths, anatomic and scientific, underlying his procedures. Some day I hope this Association will cease to debate any man's name, but, taking the best from each, we will come to agree on the principles underlying the best method for the operative cure of hernia.

I have concluded that the profession have the causes of hernia upside down, in declaring that "the congenital conditions are the predisposing," and "hard work and heavy lifting are the direct or exciting." It should be the other way; the congenital is the essential, the trauma the accidental. Now that we open up the canal and can see, we know that the "congenital hernias" and the congenital weaknesses are much more frequent than they were supposed to be. The force is a mere accident, the congenital weakness the actual cause. One can not tell the strength of the abdominal fibers by measuring a man's biceps cruris. I have seen athletic young men with the fibers of the internal oblique and transversalis as thin as paper. In a recent patient of this kind, a young man said to me, "Doctor, I am strong everywhere else; why should I have a rupture?" "Because," I replied, "you are congenitally weak in the hernial regions." The valvular condition of the peritoneum, the obliquity of the canal, the counter-pressure of the viscera and of the aponeurosis, these and other elements being present or absent, are more properly the essentials rather than strain or violence.

DR. D. N. EISENDRATH—If the sac is far down in the scrotum all we should do is to resect that portion of the sac which is in the inguinal canal. As to the sac in children, we know that it is very anatomically adherent to the cord. I have been using a method brought out at the German Hospital. I use kangaroo tendon for deep sutures and catgut for superficial sutures. In two recent cases I did not transplant the cord. I believe that leaving it in its normal position is especially advocated in non-descent of the testes. The more space we gain the better. Sometimes you will gain half an inch in the length of the cord if you do not transplant it. For the average small hernia the Bassini operation answers nearly every purpose and it is especially efficacious in cases with large internal rings.

DR. L. L. MCARTHUR (closing)—The success of present methods is dependent on the broad surfaces that are brought in contact with one another. Former failures were due to bringing edge to edge. If the obliquity of the canal is restored the force compresses the canal. One wants plastic union between broad surfaces to prevent future failure.

Ancient Medical Advice.—The following advice, which is being printed in various lay newspapers, is said to have been given by Rhazes, an Arabian physician, to his patients more than 1,000 years ago: "Study carefully the antecedents of the man to whose care you propose to confide all you have most dear in the world, that is, your life and the lives of your wife and children. If the man is dissipated, is given to frivolous pleasures, cultivates with too much zeal the arts foreign to his profession, still more so if he be addicted to wine and debauchery, refrain from committing into such hands lives so precious."

IMPACTED FRACTURES OF THE NECK OF THE FEMUR.

REPORTS OF TWO INTERESTING CASES.*

LE MOYNE WILLS, M.D.
LOS ANGELES, CAL.

During the past year I have treated two cases of impacted fracture of the neck of the femur; one I took charge of within the first twenty-four hours after injury; the second, after four months had gone by. They differed as much in age, manner of production of injury and treatment as in the results obtained.

CASE 1. *History.*—Mrs. K. C., Sherman, Cal., aged 76, widow, born in Virginia, of large frame and good health, except for rheumatism of knees. June 22, 1903, while walking on a boardwalk in her garden, she slipped and fell heavily on right hip and thigh, producing a severe contusion and pain, and was unable to get up or stand. She was put to bed and a physician summoned from Hollywood. He carefully examined her, and, diagnosing fracture, put on Buck's extension with a 10-pound weight and made her as comfortable as possible. The following day I was called in consultation; found leg in good position, a tendency to external rotation, some slight crepitus, but little if any shortening. Being satisfied that we had a fracture of the neck of femur to deal with, and the parts being in good position, very gentle manipulation was made and the dressing, which was excellently applied, was left undisturbed. We decided to send the patient to California Hospital the next morning, where she could have better attention than at home. Patient stood the journey on electric car well, and was put on a fracture bed; weight and sandbags were continued for thirty days. By great care external rotation was prevented; no harm came to her back and sacrum from the pressure. The patient stood the confinement to bed well. It seemed important, however, to get her up as soon as possible. Therefore, a well-padded plaster spica bandage of pelvis and thighs, including condyles of femur, which seemed to me the dressing best adapted for maintaining fixation of the fragments, there being a tendency to shortening, was applied July 22, 1903. (Fig. 1.)

On account of her rheumatic knees, great difficulty was experienced in her attempts to use crutches and but little progress was made in walking. By degrees, however, with the assistance of the nurse, she acquired sufficient confidence to walk a little each day. She left the hospital August 9 and returned to her home.

On October 6 two inches were cut off the lower end of cast to give the knee more movement. On October 16 the cast was split up the front in the median line. On October 27 the entire cast was removed. The cast was on thirteen weeks.

November 7 the first skiagraph of the right hip and femur was taken by Dr. Soiland. November 19 the second skiagraph of both sides on one plate was taken. November 29 the third of the normal hip was taken for the sake of comparison.

December 2 the patient walked with crutches and could bear some weight on the injured leg, and, were it not for her knees and stiffness from rheumatism, would have walked fairly well. With increasing confidence she walked more and more each day. May 1, 1904, she walked with crutch or cane, did housework and worked in her garden, almost as well as before injury. (Fig. 2.)

CASE 2.—W. A. M., aged 56, married, three children; weight, 139 pounds; height, 5 feet 6½ inches; slender; no serious illness nor injuries; always good health; house painter. While painting house from hanging ladder, Sept. 5, 1903, was knocked off; fell 35 feet; received severe contusions on left side of head, shoulder and thigh, and cheek cut, while on right side no marks except bruised spot on top of right foot, an inch in diameter, and an abrasion over right biceps; no contusion or marks on right leg, yet as he fell he struck something on way down or

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* Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Surgery and Anatomy, and approved for publication by the Executive Committee: Drs. DeForest Willard, Charles A. Powers and J. E. Moore.

after striking ground with sufficient violence to cause fracture of neck of right femur. Patient was examined at once by a physician at Redondo, recovered consciousness in a short time and was removed to his home and put to bed with a pillow under right knee. He lay in bed without any treatment, without splint, sandbags or weight, and never had a cast nor appliance of any kind until October 25, seven weeks after the injury, when he began to sit up, and on November 15 began to use crutches. This patient was sent to me for an opinion by Dr. G. W. Frink of San Francisco, the employer of son, Dec. 24, 1903.

Examination Findings.—Patient used crutches, walked badly, afraid to walk without them, and afraid to use leg much. A large amount of callus was found about right hip joint, giving firm union, but greatly restricting the normal range of motion. On measurement leg was one-half inch short, though femur was intact; foot slightly rolled inward; thigh and buttock somewhat atrophied.

The shortening and other findings narrowed the diagnosis down to dislocation upward and backward, or to fracture of neck of femur, and since there was firm union, if it were a fracture of neck, which seemed the more probable, it was important to know which of the two conditions existed for guidance of future treatment. Hence a skiagraph was taken, which showed positively the injury and variety. (Fig. 3.)

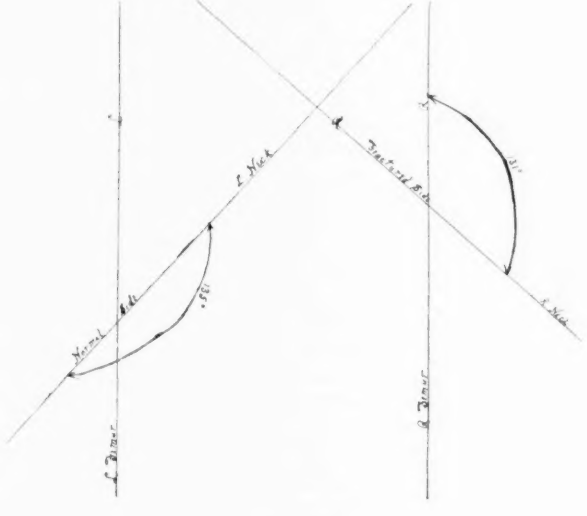

Figure 1.

CONTRASTS OF TWO CASES.

The histories of these two cases have been briefly given, and the skiagraph showed them each to have been "lateral" compression fractures, due to direct violence, varying greatly in degree, one fall being three feet, while the other was thirty-five feet, both of which were severe enough to bruise and damage the soft parts and fracture neck at or near the intertrochanteric line. Case 1 when examined was diagnosed as fracture of neck with impaction, since there was little tendency to shortening, and every precaution was taken to prevent disturbance of the apposition of the fragments. Case 2, when seen four months after the injury, was diagnosed as either dislocation upward and backward, since there was no shortening of femur, or fracture of the neck with a change of angle of neck to shaft, with a large deposition of callus, making firm union and restricting range of motion of hip joint. The skiagraphs showed impaction in each case, more marked in second case than in first, where fragments were firmly compressed by blow into one another, without much change of angle or form. In Case 2 the picture showed the fragments driven into one another, the outer and lower compact portion of neck driven like a spike into the inner fragment, consisting of small part of neck and head, and fortunately this "pegged" condition of neck was not disturbed and abundant callus was thrown out, which made good union.

The point of fracture differs a little in these two cases. Case 1 is a true "mixed" fracture, the line of fracture being partly within and partly without attachment of capsular ligament. Case 2 is entirely within attachment of capsule, and would have been called "intracapsular" by older writers, and were it not for the immobilization due to "pegging" no such outpouring of callus would have been made, nor would the result be as it is, good.

Case 1: By careful measurement of skiagraph, considering the angle of light, contrasting the normal with fractured side, there is one-fourth inch of shortening of neck of right femur, and there is but 4° of change from normal 135° on left side to 131° on the right or fractured side. This proves the statement that there is absolutely no appreciable shortening of right leg. To be accurate, I had an architect measure the skiagraphs for angles and shortening. May 1, 1904, both legs measured 34½ inches.

Case 2: Measurement of the two legs showed just one-half inch shortening of right or fractured leg, and since four months had passed since reception of injury, patient was advised to bear some weight on leg, and gradually give up use of crutches and thus gain a greater range of motion. Man now walks well; slight limp only, due to shortening.

The literature on this subject is very meager and rather unsatisfactory, most treatises on surgery passing over this very important and interesting variety of injury to the femur near the hip joint in a paragraph or two, as if it were a rare and unimportant condition. By far the best description of this condition I have been able to find is in Bloodgood's fifth edition of Helferich,[1] and I have adopted his classification of "lateral" and "median" and "mixed" in the description of these cases.

RESUME.

My reason for presenting these cases to this Section was to show the great contrasts in manner of application of force, differences in distance of fall, and method of production of fracture, especially in Case 2, where all evidences of injury were on left side, with no internal damage, while neck of right femur was fractured; contrast in treatment, one having immediate and exceptional care and attention, the other absolutely none. I wrote attending physician, asking history of case, but could obtain no reply, and simply have to depend on patient and friends and resultant condition for the history of injury given.

The results obtained are certainly beyond all expectation, Case 1 being 76 years old, with as nearly a perfect result as a younger person could expect. Case 2 walks very well, one-half inch shortening being of little moment. Two such extreme contrasts rarely come to a surgeon within a few months, hence this paper.

DISCUSSION.

DR. HARRY M. SHERMAN, San Francisco—It seems to me that the *x*-ray has weakened our diagnostic acumen in fractures in general. It is so easy, when we are in doubt, to have a radiograph taken that we do not practice clinical diagnosis as carefully as we should do. In fractures of the neck of the femur this may be different. You can not take such a case always to the hospital, and some of the patients can not

1. Fractures and Dislocations, pp. 256-259.

afford to have the portable apparatus brought to the home, and under these circumstances, ultimately, we must make our clinical diagnosis practically accurate. We must exhaust all the means at our disposal. Now, shortening of the limb is one of the classical symptoms, and yet I had two cases this past winter in which there was an absence of shortening. There was in each some disability, some pain and some discomfort. In both I happened to be deprived of the assistance of the *x*-ray. One case, after many examinations and after having had tractions on, was finally treated as a contusion. The only persistent symptom was the inability to lie in bed and lift the foot from the bed with the knee extended. And yet this man had no pain and could sit up in bed, and could, in general, move the hip as if it was sound. After a time in bed he got up, and we found then a separation of fragments and an obvious fracture. It was a very clear case, and the fragments of the femur had been impacted. The second case was put to bed after receiving a very slight injury. I supposed it was a fracture of the femoral neck, although there was no shortening and the man could lift his leg perfectly well. The case got well enough to be about, and could go to be radiographed, when he showed a very definite fracture of the neck of the femur, the under part of the neck having been driven in. In this latter case without the *x*-ray one would say there had never been anything more than a contusion. In the first case a diagnosis should have been made. The negative treatment resulted in the separation of the fragments, and then the diagnosis was clear. The second case had been treated for a fracture without definite symptomatic ground, and the result proved the wisdom of the plan. In general, in these cases, we must be careful lest we forget the art of clinical diagnosis.

DR. C. E. THOMSON, Scranton, Pa.—I do not know how the second case mentioned could be brought to a half-inch shortening if the legs were the same length originally. The *x*-ray shows more shortening than half an inch. At the Saratoga session I reported a series of cases of fracture of the neck of the femur. At that time I took one of my patients there with me to demonstrate bony union by the nailing operation, and I want to make a further report on that case. He walked well with the aid of a cane and had no pain. There was almost normal motion, and I considered him equal to the first case that I had reported, and presented the specimen to the Section, which proved that the union was bony. After the Saratoga session my patient developed a cancer of the stomach and died, and I had an opportunity of holding a postmortem, when I was surprised to find that there was no bony union. When the patient was presented to the Section he walked well and could bear all his weight on his leg.

DR. WILLIAM L. RODMAN, Philadelphia—The only good results that I have ever had in fractures of the femur high up in old people were in the few impacted fractures that I have seen. I think we should remember that in the impacted fractures of the femur in this situation the best results will be secured by letting them alone, while in closed fracture this is not true. In these cases "disimpaction" should be practiced, and the kind of splint you use will be of very little importance. In the case mentioned it is very easy to understand why the shortening was not greater than it was. The fracture was evidently very high up and was intracapsular. The old nomenclature of intracapsular and extracapsular fracture will not do. The vast majority of these cases are partly within and partly without, as the capsule does not extend equally low. The *x*-ray shows them to be both anterior and posterior. I am very glad Dr. Sherman has objected to our depending so much on the *x*-ray. If we are not careful the diagnosis of fracture will soon be a lost art. We are teaching students who are going to parts where the *x*-ray can not be gotten, and we are not giving them the amount of practical knowledge that we should. I never refer to the *x*-rays to students. They can not take an *x*-ray apparatus with them.

DR. M. K. CRANE, Rutland, Vt.—Three years ago my wife fell on the sidewalk and sustained an injury of the left hip. On examination one-half inch shortening was found, but there was no eversion. I thought she had an impacted fracture and I kept up extension for seven weeks. She could rest better with the weight on than off. She was confined to her room for five months, and had about half an inch of shortening on getting up. I never saw a case suffer so much pain. She now walks with a cane and has about three inches shortening. I have a good skiagraph of the case. Some state that the leg should have been nailed, but I do not know that that would have been any improvement.

DR. DANIEL N. EISENDRATH, Chicago—I had a very interesting experience recently, which I believe shows that occasionally the callus in a fracture of the neck of the femur either becomes absorbed to a great extent or osteoporosis occurs, permitting the fragments to move on each other so that shortening of the limb can occur many months after the period of the original fracture. During the past spring a man appeared at my clinic who stated that two years ago he had sustained a fracture of the neck of the femur. At that time measurement of the limbs showed a very slight difference. He states that the fracture had healed, but that during the past six months the leg had become gradually shorter until at the time of my examination there was a difference of two and a half inches. The *x*-ray examination made by my assistants showed a typical fracture of the neck of the femur, and there was free mobility at the point of fracture. We must teach our students not to depend too much on the *x*-ray examinations in the diagnosis of fractures. They should be taught not to overlook the many cardinal signs of fracture which enabled us to make fairly accurate diagnoses even before the advent of the *x*-ray. In this class of fractures (neck of the femur) one of the most typical signs has always seemed to be the eversion of the leg.

DR. JAMES B. BULLITT, Louisville, Ky.—I recently obtained a postmortem specimen which showed plainly the possibilities in cases of hip joint injury. The patient was an old lady who fell on the pavement, and while no definite signs of fracture could be elicited, she was treated as if she had one. Later she died of heart disease and the postmortem specimen showed no fracture of the hip joint at all. She had suffered a simple bruise, but the bone head and neck were infiltrated with blood. This condition sometimes afterward leads to the condition which Dr. Crane has spoken of. It seemed to me it might have been called the first degree of fracture. The woman might possibly have had later a breaking down of the head of this bone due to the failure of the vital processes. We are familiar in Louisville with a case in which two competent surgeons failed to agree. One said fracture and the other said not. One saw the case early and one saw it late. These opinions were absolutely irreconcilable, but it seems to me the above case offers a possible explanation.

DR. E. D. FENNER, New Orleans, La.—I am surprised there has been no mention made of the Hodgen splint. Those who have used it have all been struck by its tremendous influence for good on the comfort and health of the patient, and in old people its use will do much to prevent just such a fatal termination as has been mentioned by Dr. Bullitt. I call attention to this splint because it will preserve the health and life of old patients suffering with fracture of the femur.

DR. LE MOYNE WILLS—I have presented these two cases because they afford the greatest contrasts. Case 1, as shown by skiagraph, was very slightly impacted, and thanks to the gentleness of manipulation of the physician who first saw the patient, the impaction was not disturbed. The case was so interesting that I went to the trouble of taking a portable *x*-ray machine three times to the patient's house, sixteen miles from Los Angeles, so as to establish and confirm my diagnosis beyond a doubt. In the second case the *x*-ray was taken to differentiate between impacted fracture and dislocation, so as to advise the patient as to proper treatment regarding the use of the leg. In the first case I do not think any splint would have held the leg in as good position as the spica plaster dressing, extending down to and taking in the condyles of femur. It was well padded and made large enough to be comfortable, and held the leg immovably in the proper position. There was no tendency to shortening and I desired to get the patient up

as quickly as possible, and thus avoid the dangers of a long time in the horizontal position, which often causes hypostatic pneumonia in the aged. My patient was a very vigorous woman and has made a perfect recovery. The callus in each case was large and securely held the fragments in proper apposition and subsequently made good bone.

OSMIC ACID INJECTIONS FOR RELIEF OF TRIFACIAL NEURALGIA.

JOHN B. MURPHY, A.M., M.D.
CHICAGO.

(Concluded from page 955.)

CLINICAL CASES.

CASE 1.—Mr. A. L. C., age 76 years, retired farmer. Admitted to Mercy Hospital June 8, 1903.

Present Illness.—For thirteen years has suffered from neuralgic pains in right side of face, but they were not very severe or constant until four years ago. At that time he had a severe attack which he thought was caused by a diseased right upper cuspid. The tooth was removed about two months after the onset, and for six weeks following he was relieved. Pain then recurred and was severe and persistent. Two years ago he had an operation performed on the right superior maxilla, the exact nature of which he does not know. He was free from pain for four months after the operation, but at the end of that time it returned and has been present, at intervals, ever since. The pain is of a severe shooting character, beginning at right ala nasi and radiating toward cheek. He also has some pain in the forehead, just above the right eyebrow, radiating toward temple. General health has been fair for a man of his years.

Previous History.—"Ague," "bilious fever," etc., years ago. Used to smoke and drink moderately. Family history negative. Examination shows a man of rather poor nourishment; lungs and heart negative; arteries sclerotic. Urinalysis negative. Slight tenderness over supra- and infraorbital divisions of fifth nerve at their foramina of exit. No areas of hyperesthesia or anesthesia and no evidences of tumor or inflammatory processes along the course of either nerve.

Operation.—June 11, 1903. Supraorbital, infraorbital and mental branches injected with 1½ per cent. solution of osmic acid. In the afternoon his temperature was 99.8 F., and pulse 64. His pain had entirely disappeared. June 12, p. m., temperature 100, pulse 70; June 13, p. m., temperature 99.8, pulse 62; June 14, temperature and pulse normal; sat up in chair. After this temperature remained normal, he was up and around every day and the sutures were removed June 17. Wounds healed by primary union. Patient discharged from hospital, with pain entirely gone, June 20. In a report received from this patient July 21, he states that there has been no recurrence of the pain and that he feels perfectly well.

In a later report received April 14, 1904, he says he has had no pain since operation and that his general health is excellent. Appetite good, and he sleeps well.

CASE 2.—Mr. H. H. C. Age 55 years. Farmer. Admitted to Mercy Hospital Sept. 25, 1903. Family history negative.

Previous History.—"Typhoid fever" at 35. "Measles" 12 years ago. "Catarrh" for the past 30 years. Had recurring attacks of "malaria" 25 years ago. Attacks were always cured by quinin. Never used alcohol to excess, but has chewed tobacco.

Present Illness.—Twelve years ago while working in the cold suddenly felt sharp pain in right lower jaw and a little later in right upper jaw also. This attack was of short duration, but in the year following he had a second similar one. Since then they have recurred at gradually shortening intervals, and have become more severe and the area involved more extensive. For some time past the entire right side of the face and nose have been affected and the pain has been almost constantly present. It is always aggravated by eating and talking. He has had frequent acute exacerbations of the pain during which it is sharp and shooting in character and radiates from the malar prominence to the lower jaw, above the right eye and over the right side of the nose and temporal region.

Examination.—Shows a well-nourished man of medium stature. The foramina of exit of the three branches of the fifth nerve on the right side are tender to pressure. Urinalysis negative.

Operation.—Sept. 27, 1903. Supraorbital, infraorbital and mental branches injected with 1½ per cent. solution of osmic acid. Convalescence was uninterrupted and the wounds healed by primary union. (Sutures removed October 3.) On September 28 patient complained of slight twitching pain in the two upper wounds when he was eating breakfast. October 1, examination showed no sensitiveness to the prick of a pin over the area supplied by the supraorbital. Analgesia also present in area anterior to mental foramen. Has had no pain in the upper lip. There is sensitiveness, however, posterior to the outer canthus of the right eye and this area extends down on the side of the face. On the night of October 3 he had an attack of pain in the right side of the face above. This was similar to, but not so severe as the pain from which he suffered before the operation. October 6, patient stated that the pain was rapidly diminishing in intensity and that he had had no pain in the lower jaw. Left hospital Oct. 8, 1903.

Patient readmitted to hospital April 7, 1904. For three months after going home he had very little pain, but in January, 1904, the pain returned in the right lower jaw behind the molar teeth and extending backward and upward to a point in front of the auditory meatus. It was not so severe as formerly, but came on every day until two weeks ago, when it subsided. About March 1 he began to have pain in the right upper jaw, extending along the gum and roof of the mouth. This was very severe and has continued almost constantly until the present time. He had no pain around the eye nor on the forehead, but slight in the right ala nasi.

Examination of the patient shows: 1. A zone of diminished sensibility 1 inch in width by 3 inches in length, extending above the right eyebrow. 2. Diminished sensibility of right side of nose. 3. Area of diminished sensibility on chin extending from symphysis to right angle of mouth and from lip to edge of jaw. There are no areas of complete anesthesia.

Second Operation.—April 9, 1904. The infraorbital nerve was exposed by incision through the mouth and injected thoroughly with a 1½ per cent. solution osmic acid. The mental branch was then similarly treated. The inferior dental branch was next exposed as it entered the mandibular canal and also injected. The lingual nerve was isolated just posterior to the last molar tooth and injected. Lastly, the posterior palatine nerve was injected, and the posterior palatine foramen. In the nerves which had been previously injected was found the staining of the tissue by the osmic acid, but there was no destruction of the nerve substance. Convalescence uninterrupted and the patient left the hospital April 16, 1904. At the time of his discharge he had absolutely no pain and had had none since operation. The right half of the tongue, right half of lower lip and of face, external to nose, were anesthetic and analgesic. Letter received from this patient since his return home states that he has remained entirely free from pain.

CASE 3.—Mrs. W. B. Age 28 years. Admitted to Mercy Hospital Oct. 6, 1903.

Family History.—Brother and sister died of pulmonary tuberculosis.

Previous History.—No serious illness. Had two miscarriages, but no children at term.

Present Illness.—Fourteen years ago began to have severe neuralgic pain around the right eye. Since then the attacks of pain have become more frequent and severe and for the last eight years she has been confined to bed every two weeks with the very severe pain about the right eye. The attacks usually last 24 to 36 hours. No pain in any other part of the head or face. Examination shows no tenderness over the supra- or infraorbital nerves. Urinalysis negative, except for the presence of a few pus cells.

Operation.—Oct. 7, 1903. The supraorbital and infraorbital

nerves exposed by external incision over the foramina of exit and injected with a 2 per cent. solution of osmic acid. The mental nerve exposed by incision from within the mouth and injected. Convalescence uninterrupted.

Examination of the patient October 9 showed numbness of the skin over the right side of the face and scalp backward to the occipital protuberance. An area just in front of the right ear was not completely analgesic, but still sensitive to the tests.

Second examination, October 13, showed numbness over right side of face and scalp except in front of the right ear. Patient left the hospital Oct. 13, 1903.

In a report received April 14, 1904, she states there has been a return of pain just above the right eye. A few attacks have been nearly as severe as before operation, but most of them have been slight and have not lasted so long. She also states there is no numbness now present in the face. General health good. The attacks of pain always come on when she is tired out or nervous.

CASE 4.—Dr. E. R. M. Age 40 (?) years. Admitted to Mercy Hospital Sept. 11, 1903.

Present Illness.—Seven years ago patient sustained a crushing injury of left hand necessitating amputation through forearm about one inch above the wrist. Immediately after operation patient complained of severe pain in the amputated hand and this persisted until March, 1897, when a second amputation was done a short distance above the first. This gave him no relief, so a month later, a third amputation, with resection of the ulnar and median nerves, 2 inches above the elbow, was performed. As the pain continued severe after this, a fourth operation was performed in November, 1898, wedge-shaped piece being removed from the ends of the nerves and the edges of the resulting defect, with the sheath, sutured together. The "pain in the hand" still persisted and in August, 1901, the radial, ulnar and musculospiral nerves were again resected, but with no benefit to the patient.

Operation.—Sept. 12, 1903. Incision in left axilla, along border of pectoralis major. Brachial plexus exposed and its inner, outer and posterior cords thoroughly injected with a fresh 1 per cent. solution of osmic acid. Wound healed by primary union. Immediately after this operation, the pain was somewhat less severe than before, but the improvement did not last long. He left the hospital September 25. From then until October 9 the pain was about the same as before the injection. He was readmitted October 9 and again operated on October 10. This time the pectoralis major was divided square across and the brachial plexus exposed at its upper part. The 3 trunks were again isolated separately, and each injected for ¾ inch with a 2 per cent. solution of osmic acid. The infiltration of the nerve substance was very thorough and 20 to 30 m. of the solution were used in each trunk. The ends of the pectoralis were then approximated with heavy catgut sutures and the skin brought together by means of silkworm gut and horsehair. Convalescence was uninterrupted. On October 15 the sharp pain which had been present in the fingers had disappeared, but he occasionally had very severe pain in the hand. On October 17, pain in fingers had returned, but there was no "transmission of pain upward along the nerves" when he moved or exerted pressure on them as there was before operation. There was complete anesthesia and motor paralysis of parts supplied by the injected nerves. He could not flex and extend elbow, but was able to rotate a shoulder. He left hospital Oct. 23, 1903.

In a report received April 14, 1904, patient states that the pain in hand and fingers is just as severe as before operation. Transmission of pain on pressure or friction upward along nerves in arm is returning. The numbness which was present immediately after operation is gradually disappearing, though it is still present on outer surface of arm and over entire forearm. Motion is gradually returning in muscles of shoulder and upper arm.

CASE 5.—Dr. S. W. L. Age 62 years. Admitted to Mercy Hospital Oct. 31, 1903. Family and previous history negative.

Present Illness.—For past eight or nine years patient has suffered at irregular intervals from attacks of severe pain in right side of face. Pain begins at ala of nose and radiates to right side of nose and upper lip, infra- and supraorbital regions, passing upward 1½ inches above right eye and backward to a point 1½ to 2 inches anterior to right ear. The pain is at times most intense and often accompanied by twitching of right facial muscles. Examination shows extreme tenderness on pressure over right supraorbital foramen and along the right side of nose, especially at lower part. Urinalysis, negative.

Operation.—November 2. The supraorbital and infraorbital branches were exposed by external incisions, and the mental by incision through mouth at junction between lower lip and outer surface of lower jaw. Each branch was thoroughly injected with a 2 per cent. solution of osmic acid. Convalescence uneventful.

Examination November 3 showed anesthesia of right side of face extending upward 1 inch above supraorbital ridge, backward to a vertical line drawn ¾ inch anterior to right external auditory meatus and inward nearly to median line. The pain had entirely disappeared. He left hospital November 5.

In a report received April 14, 1904, he states there had been no return of the pain. After returning home the infraorbital wound became inflamed and discharged a small quantity of pus for two months. It then healed permanently. The numbness of right side of face was still present.

CASE 6.—Mrs. A. B., age 63 years. Admitted to Mercy Hospital Dec. 1, 1903. Family history, negative.

Previous History.—Has been constipated since childhood. Has had three children, all living and well. Had infectious diseases of childhood and "typhoid fever" twenty-nine years ago.

Present Illness.—Began eight years ago during the cold weather with marked hypersensitiveness over the right malar prominence, followed in a short time by aching pain in the right upper jaw. The dentist extracted two teeth which were supposed to be the cause of the pain. Then she had some relief for a few days. Pain then returned and was continuous with severe acute exacerbations, usually coming on at night for the two years following. It then gradually gave place to frequent attacks of very severe sharp shooting pain in the right upper jaw. In January, 1900, the lancinating pain began to radiate into the right lower jaw and has persisted in two lower divisions of the fifth nerve since that time. For the last two and a half years she has rarely slept longer than a half hour at a time, because of the intensity of the pain and the frequently recurring attacks. Supraorbital nerve has not been affected; some dull occipital headache since 2½ years ago. Examination: Marked tenderness over the foramina of exit of the infraorbital and mental nerves. Urinalysis, negative.

Operation.—Dec. 12, 1893. Infraorbital nerve was exposed by incision through the mouth at junction between the cheek and the upper jaw, above the cuspid tooth. The mental branch was exposed by incision within the mouth at the junction between the lower lip and the lower jaw. Both were thoroughly injected with a 1½ per cent. solution of osmic acid. Convalescence uneventful, except that slight purulent discharge persisted from the upper wound. Patient left the hospital December 12 with pain entirely relieved.

In report received from this patient April 14, 1904, she states there has been absolutely no return of the pain. Slight discharge persisted from the upper wound for a month after going home and for a shorter time from the lower wound. Numbness of the parts supplied by the injected nerve persists. Her health, she says, is better than it has been for many years.

CASE 7.—Mr. M. M. J. Age 54 years. Admitted to Mercy Hospital Dec. 8, 1903.

Family History.—Father has been a sufferer from trifacial neuralgia for a number of years.

Previous History.—Eight years ago patient had renal colic and passed some small calculi and blood in his urine. Last spring complained of painful urination and pain in lumbar region and, at times, along the sciatic nerve.

Present Illness.—Began six years ago with hypersensitiveness in left supraorbital region. At that time pressure above the left eye would cause shooting pains through the head. A few months later he suffered an attack of "erysipelas" on the left side of the face and following this had severe shooting and

burning pain, coming on in paroxysms, in left side of face. The pain was most severe in the left side of upper lip, cheek, supraorbital region, roof of mouth, and in an area just posterior to and in front of the external meatus. The paroxysms have persisted since onset, but have come on at irregular intervals. At one time he was free from pain for a year, but since about nine months ago the attacks have come on every day.

Examination.—Shows tenderness on pressure over foramina of exit of the three branches of the fifth nerve on the left side. Urinalysis, negative.

Operation.—December 9. Supraorbital nerve exposed through incision over supraorbital foramen. Infraorbital and mental nerves reached through incisions from within the mouth. All three branches thoroughly injected with a 1½ per cent. solution of osmic acid. On December 16 some offensive purulent material was discharged from infraorbital incision. Also slight discharge from the incision over the mental foramen. Primary union of supraorbital wound. Patient left hospital December 22, with pain entirely gone, but some discharge from two lower wounds persisting.

In report received from this patient April 14, 1904, he states there has been no return of pain. Discharge from infraorbital and mental wounds continued for one month after going home. Before the lower wound healed a small piece of necrotic bone in the lower jaw was discharged. The numbness of face, supplied by the injected nerves, continues. His general health is excellent and he has gained 20 pounds in weight since the operation.

CASE 8.—Mrs. W. J. C. Age 40 years. Admitted to Mercy Hospital Feb. 10, 1904. Family and previous history negative.

Present Illness.—Began 1½ years ago with dull pain in the right side of the lower jaw. After a short time pain began to radiate into the right cheek and upward toward the right eye. When the pain became more general over the right side of the face it came on in paroxysms, lasting for a few minutes at a time and occurring every day for several months at a time. Last October she was free from paroxysms for three weeks. Four months ago pain became less severe in the jaw and concentrated in the right eye and right supraorbital region. At the same time it developed in the inner side of the right upper jaw and right half of hard palate, where it has persisted until the present time. At times she has had shooting pains in the back of the neck, in front of the right ear, and in the right half of the tongue.

Examination shows tenderness over the supraorbital, infraorbital and mental foramina. Urinalysis: Albumin present; no sugar, no casts. This albuminuria was transient and disappeared after a few days.

Operation.—Feb. 11, 1904. Supraorbital nerve injected through incision over supraorbital foramen. Infraorbital and mental nerves exposed through incision within the mouth. All three nerves injected with 2 per cent. solution of osmic acid. The posterior palatine nerve was exposed through incision in hard palate over posterior palatine canal. It also was injected with 2 per cent. osmic acid solution. On February 13 examination showed numbness of skin on the right side of the face and in mucous membrane of right half of hard and soft palate. Pain did not entirely disappear from the eye until February 20, after which date she had absolutely no more pain. She left the hospital Feb. 26, 1904.

Later reports from this patient show she has had no return of the pain since February 20. Slight discharge persisted from infraorbital wound for several weeks after she went home. The sinus, however, completely closed and she had no further trouble from it. July 18, the sinus reopened and caused some pain for a few days preceding the discharge.

CASE 9.—Mr. A. G. D. Age 63 years. Occupation, merchant. Admitted to Mercy Hospital April 11, 1904.

Family History.—One sister has suffered from neuralgia.

Previous History.—"Intermittent fever" while in army in 1862. Ten years ago he was told that he had "kidney trouble."

Present Illness.—Ten years ago he began to have pain in the right side of the upper lip and soon afterward in the right cheek. The pain next affected the mental division of the fifth on the right side, and lastly the right supraorbital division. For the first two or three years the pain was not very severe, but the paroxysms gradually increased in frequency and intensity until of late they have been almost unbearable. At this time he had a resection of the infraorbital branch through the foramen into the orbital cavity. It gave relief for a few months only. At the present time all three divisions are about equally affected and there is constant and characteristic radiation. The right side of the face is always tender to pressure, and eating is so painful that frequently he takes no nourishment for a day or two at a time. During a paroxysm of pain the tears flow down over the cheek, the right side of the face is flushed and there is twitching of the facial muscles under the eye. The attacks last a quarter to one minute and occur many times a day and often during the night. When he eats, drinks or swallows he has severe pain in the right side of the hard palate and in the right half of the tongue. Examination shows tenderness over entire right side of face, especially over three foramina of exit. Urinalysis negative.

Operation.—April 13. Supraorbital nerve exposed through external incision, infraorbital and mental branches through incision from within the mouth. All three divisions injected with a 1½ per cent. solution of osmic acid. The lingual and posterior palatine nerves were then exposed by incisions through the mucous membrane and injected with the same solution. External wound closed with horsehair suture and mucous membrane wounds with catgut. On April 18 it is noted that the patient had no pains since the operation. On April 20 there was considerable swelling of the right side of the face and he had an afternoon temperature of 100.6 degrees. Sutures removed. Temperature went down to normal the next day and remained so during the remainder of his stay in the hospital. On April 25 the following areas of analgesia were found on examination: 1. Right supraorbital region almost to hair line. 2. Right side of nose. 3. Right side of face, adjacent to nose. 4. Right upper lip. 5. Right lower lip and chin. 6. Right side of tongue and roof of mouth. Taste not affected.

Patient left the hospital entirely relieved of pain on April 27.

In a letter received from this patient, May 24, 1904, he states there has been absolutely no return of the pain. The lower wound is still discharging purulent matter and has been incised several times to secure better drainage. There is some swelling over the lower jaw. This is probably due to a necrosis of the mandible around the foramen menti, the result of the injection. While this case was not a typical one for the osmic acid treatment because the infraorbital nerve had been previously resected, the relief is complete up to date. The infraorbital nerve had redeveloped to about its normal size. It seems to me that the redevelopment of the nerve bears a close relation to return of the neuralgia.

CASE 10.—Mr. C. J. Age 81 years. Admitted to Mercy Hospital April 15, 1904.

Family History.—Patient's son was operated on for trifacial neuralgia Dec. 9, 1903. (See Case 7.)

Previous History.—Several years ago the superior maxillary was resected at the *foramen of exit from the skull*, with temporary relief to patient.

Present Illness.—For several years past has suffered from severe paroxysms of pain in right side of face. The pain radiates through all of the branches of the fifth, but is particularly severe in the infraorbital and the anterior auricular branches and in the right side of the lower lip. The fact that the superior maxillary root had been resected so deep made it questionable whether the osmic acid would relieve the patient, but it was deemed advisable to try it. On exposure of the infraorbital foramen the nerve was found to have regenerated to about its normal size, although sensation to pain over that area was perverted, but not absent.

Operation.—April 16. Supraorbital nerve exposed by external incision and infraorbital, mental and posterior palatine by incisions from within the mouth. All four branches were injected with a 1½ per cent. solution of osmic acid.

Convalescence uneventful and patient left hospital April 23. On date of discharge from hospital examination showed analgesia to be present in right supra- and infraorbital regions, right side of nose and right halves of upper and lower lip. The patient has had no pain since operation.

Two months after the operation there began to be pronounced pain in the superior maxillary area and in the anterior auricular branch. This increased rapidly in severity until patient presented himself, July 15, when he was suffering severe paroxysms of pain in the upper jaw and in the neighborhood of the ear. It was decided to remove the ganglion.

Operation.—Through the Cushing incision the mandibular and superior maxillary branches were readily exposed. They were divided at the foramen and avulsed with the ganglion. There was considerable hemorrhage, but the patient, notwithstanding his age (81 years), withstood the operation very well. Iodoform gauze drain remained for forty-eight hours, after which it was removed. There was an escape of some cerebrospinal fluid.

This was my twelfth gasserian ganglion operation, but I must confess that familiarity with the technic has not made it any more inviting.

The second and third days following the operation the patient was in excellent condition, save a gradually increasing intestinal tympany; the paralytic condition of the bowel continued for many days, and the marasmus increased. There was primary healing of the wound. On the eleventh day his senile marasmus increased and he died August 4, fourteen days after operation. This case shows what a grave matter it is, notwithstanding the fact that the wound made a primary healing, to operate on a patient of his advanced years.

CASE 11.—Miss E. Y. S. Age 50. Admitted to Mercy Hospital June 2, 1904.

Family History.—Mother and father died along in their eighties. Sisters and brothers all living.

Personal History.—Has always lived at home.

Menstrual History.—Began at 14. Regular every four weeks. Usually painful for a day or two preceding flow. Flowed about four days. No intermenstrual flows. Menopause four years ago.

Previous Illness.—Measles when young. Some mild attacks of rheumatism.

Present Illness.—In May, 1902, patient first felt a sharp, cutting pain in her left cheek along the outer canthus of the eye. She thought it was from her teeth and had most of her upper teeth extracted. Following this she had relief for a day or two. She then called a physician and he gave her medicine which relieved the pain for a short time. She went away to the seashore and the pain grew worse and covered a larger area. Pain traveled up over the eye and involved the lower angle of the jaw. Returned home; pain gradually grew worse and patient was forced to go to bed and remained there for five months, during which time she could not take any solid food, nothing but warm liquid diet, as the pain was so intense when she moved her jaws. She went to California and remained there for many months, but received little or no relief. The pain was almost constant with the exception of a few hours each day.

Present area of pain: Over region of masseter muscle; over and to the side of the left eye; along the angle of the lower jaw; nose has never been involved; gums have never been involved; lower portion of left chin and lip. Bowels usually regular. Appetite fair, but the taking of food was so painful that she is much emaciated.

Operation.—June 4, 1904. Exposure of supraorbital, infraorbital, mandibular and posterior palatine branches of trifacial nerve. From 7 to 10 minims of a 2 per cent. solution of osmic acid were injected into each of the nerve trunks, and a few drops into each foramen. There was only slight irritation and very little edema. The second day following the operation all of the neuralgic pains had disappeared; on the third day anesthesia of the left side of the forehead, left cheek, nose and upper side of lip, also on the left lower lip and chin, extending back to the angle of the mouth. The face was swollen and continued so for about three weeks, but gradually subsided. In a letter dated July 2 the patient states that she is entirely free from pain and has had a month of comfort and ease which she never expected to experience again. In a letter, August 8, patient states that her condition is just as satisfactory as it was on July 2.

In a third letter, dated September 9, the patient states she is still free from pain. The upper and lower incisions are still suppurating, the latter quite freely. The inferior maxillary nerve protruded, and about one inch in length, very much blackened, was pulled out.

CASE 12.—Mrs. D. H. K. Age 62 years. Admitted to Mercy Hospital June 20, 1904. Discharged July 6. Family history negative.

Personal History.—Married at 30; has four children living; no miscarriages; no evidence of specific infection. Menstrual history began at 15; regular; duration three days; painless; menopause at 45.

Present Illness.—Nine years ago patient began to notice sharp, cutting pain along the angle of the left lower jaw. It remained confined to that locality for a few weeks, then extended to the outer angle of and above the left eye. Eight years ago the infraorbital branch was resected. Following the operation she was free from pain for six months. Then it returned with more intensity and in a larger area; always on the left side. She has had the "rest cure" in New York, but received no relief. Three years ago she was again operated on and portions of the supramaxillary resected, back into the orbit. This gave her relief for eight months. Since that time pain has been constant on the inner side of the cheek, in the gum, left lower jaw, above and below the left eye. The pain was intense if she was exposed to draughts, taking cold drinks, eating, talking, or on contact of any material with the face. She has been compelled to live on liquid foods and to take them through a tube or drop them into her mouth. She has emaciated considerably. This case, having had a division of the nerve on two occasions, was not a favorable one for the injection.

Operation.—June 23. The supra- and infraorbital nerves were found freely developed and about their normal size, notwithstanding they had been resected. The mental branch had also regenerated and was larger than normal. The foramina as well as the nerve trunks were injected with the usual quantity of 2 per cent. solution. There was slight suppuration around the mental foramen. These wounds are subject to infection from the mouth and as the osmic acid produces necrosis of the tissue *in loco*, they are, therefore, very liable to infection.

In a letter received from this patient July 21, 1904, she states there has been no return of the pain. There is still some slight discharge from the incision at the mental foramen. In a letter received August 20 the patient says that her case is progressing favorably. There is some discharge at the foramen menti and some slight induration at the infraorbital foramen.

CASE 13.—Mr. J. E. V. Age 60 years. Admitted to Mercy Hospital July 10, 1904. Discharged July 18. Family history negative.

Personal History.—Married twenty-eight years; has been a heavy smoker; very moderate drinker, and has always been well and strong. No specific disease.

Present Illness.—July 16, 1901, was sitting at his desk talking to his secretary when he suddenly lost his power of articulation. He did not fall out of his chair; just leaned over on his desk. He was not able to speak, but was sufficiently conscious to understand what his secretary was saying. This attack of inability to speak lasted a couple of minutes only. Immediately thereafter patient stood up, but felt very weak in his legs. Half an hour later he was able to walk to his carriage and go home. For ten days following this his mental condition was not exactly clear and he did not have entire control of his words, that is, he would endeavor to say one thing and would say something entirely different. The patient says

he was told at a Michigan sanitarium that he had softening of the brain. He was treated for five weeks at Detroit and regained control of his power of articulation and expression.

In September, 1902, patient began to have very severe headaches; they were "all over his head," but were especially bad in the frontal region. They continued all fall with only slight intermissions. In January, 1903, patient began to have severe pain just under the angle of the upper lip on the left side of the face, over the left cheek, the outer canthus of the eye and the left eyebrow. There was some pain in the lower lip and roof of the mouth. This came on in spasms whenever he partook of food or drink, touched his face, or was subject to a draught. The pain was intense, totally incapacitating him. He was under strychnia treatment by a celebrated neurologist with apparently no effect. The pain was present during all of his waking hours and frequently roused him from his sleep. He became emaciated and finally resorted to large doses of opiates.

Examination.—The patiert will not permit one to touch any part of the left side of his face. He is fed by lying flat on his back and having the food dropped from the end of a spoon into his mouth. He does not permit it to touch his hard palate, his teeth or the anterior portion of his tongue. When it does there is severe spasm of pain. The posterior palatine, supraorbital, infraorbital, anterior palatine, mandibular and anterior auricular branches are all disturbed. He has never had an operation.

Operation.—July 10. The supraorbital branch was exposed by external incision; the infraorbital and mental branches through the mouth. The posterior palatine was a little difficult of exposure, but was finally hooked up. All of these branches were injected with from 7 to 15 minims of a 2 per cent. solution of osmic acid and the wounds closed. There was some suppuration from the infraorbital area. The second day after the operation there was a very slight twinge of pain. From that time up to date he has been entirely free. The pain in this case was located on the left, the same side on which he had his central cerebral lesion, which affected his speech, about two years previous, and would suggest that this central lesion was the cause of the pain.

He discontinued his morphin at once. The suppuration in this case extended along up the line of injection, in the foramen to the orbit, necessitating a small incision in the lower lip for drainage.

His report on August 25 states there has not been the slightest recurrence of the neuralgic pain.

CASE 14.—Mrs. C. W. S. Age 47 years. Admitted to Mercy Hospital July 1, 1904.

Family History.—Father and mother living.

Personal History.—Has been married twenty-seven years; two children; no miscarriages; no evidence of specific infection. Menstrual history began at 12 years; regular every twenty-eight days; menopause three years ago. Menstruation was never painful; gave her no discomfort.

Previous Illness.—Had rheumatism some years ago.

Present Illness.—In the fall of 1896 patient noticed a small tumor on the right side of the lower lip. It was present for four months. Her family doctor pronounced it carcinoma and had it removed by paste. Seven years ago last April patient had a severe attack of bronchitis; during this attack she sat up in bed to cough when she was suddenly taken with a severe cutting pain on and along the right side of the nasal cavity. This pain gradually extended over the right side of the face into the right upper gums and into the lower jaw. The pain lasted but a short time, but returned every time the patient partook of food, hot or cold drinks, or whenever her mouth was open to draughts, or if a draught passed over her face. This condition lasted about six weeks. During the summer of that year it entirely disappeared. In November of the same year she was attacked with the same type of pain, but over a larger area, and it was particularly severe in the right eye; always aggravated by exposure to cold, the taking of food or liquids, or the moving of her lips, washing the face, etc. The following summer there was slight relief.

In March, 1899, patient was operated on and the infraorbital nerve resected. Patient was entirely free from discomfort for one year.

In March, 1900, patient began to again have pain below the right eye and in the right upper jaw. This time patient had all of her teeth extracted. This relieved her of all pain up to October of the same year. Again the pain returned in the same positions. In July, 1900, patient was again operated on, resecting the stump of the infraorbital and the supraorbital nerve. Following this patient had no pain up to June, 1903, when it returned in the former locations. In July, 1903, she had a third operation on the same nerves. After this she was free from pain until March, 1904. Since that time the pain has been intense all over the right side of the face and right side of the mouth and gums; it has been constant, with occasional relief for a week or two. During most of this time patient has had occasional attacks of dysuria. These have no special relation to the neuralgic attacks. The sensation to touch, heat and pain have returned all over the face, notwithstanding the resection of the nerves, but it is somewhat perverted. She states that after each resection there was anesthesia over the area supplied by the nerves resected, but that after some months this anesthesia disappeared and the face assumed practically its normal sensibility.

Operation.—July 20, 1904. Supraorbital and infraorbital branches had redeveloped to about their normal size. The mental branch was represented by a small threadlike nerve escaping though an opening one-third of an inch above the original mental orifice, which had filled by new bone after the last operation. The supraorbital, infraorbital, mental and posterior palatine branches were all injected, as well as the foramina, with the usual quantity of 2 per cent. solution. The day following the operation she had some pain; on the second day after there was entire absence of neuralgic pain. In a letter August 20 the patient states the relief has continued up to date.

RESULTS.

The results obtained by operations may be divided into: First, the resections of the nerve trunks, extracranial; second intracranial divisions; third, ganglion removal; fourth, sensory root division or avulsion. From the standpoint of danger to the life of the patient, the extracranial may be said to be free from danger except in senile patients, when any operation has in it elements of danger. The relief from this type of operation has in a small percentage been permanent. In a very large percentage it has lasted from nine months to three and a half years. In all of the intracranial operations there are about the equal elements of danger, as the exposure of the nerve branches, ganglion and motor root is the most difficult and dangerous part of the procedure. The seriousness of this procedure has been impressed on me by four deaths in my 12 cases, a mortality of 33 1/3 per cent. Two of these deaths occurred in patients over 80 years of age. The analysis of 108 cases collected by Tiffany, as shown in the following table, shows the great mortality of these operations—great, since the disease, *per se*, does not threaten life.

TYPE OF OPERATION.

Nearly two-thirds Hartley-Krause, nearly one-fourth Rose's, 7 Horsley's, 4 Doyen's, 4 Quenu's, 1 Novaro's, 1 no method mentioned.

Nerves affected: Right side twice as often as left; third division alone 10 times, second division alone 6 times, first division alone none; involvement usually reflex. All divisions 22 times, second and third divisions 68 times.

Mortality of 108 cases, 23 died—22 per cent.

Cause of death: Shock, 8; sepsis, 8; brain trauma, 2; brain abscess (trauma ?), 1; brain trauma and edema of lung, 1; apoplexy on tenth day, 1; cause unknown, fourth day, 1; cause unknown, sixth day, 1.

"Recurrence of pain after removal of gasserian ganglion is

not recorded." The author says "it can not occur." But the clinical fact is that it *does* recur in quite a percentage of cases in which the ganglion has been supposedly removed, and recent experiments support the clinical phenomena that it can and should recur. The immediate result of intracranial operation, whether section or removal of ganglia, is relief of pain. Recurrence in cases of excision are not uncommon.

Ordinary sensation in the territory supplied by the nerve operated on is abolished over a small area and exists irregularly over a large area. Ordinary sensation will be found where pain sense is absent. Sensations of heat and cold are frequently forfeited. Tiffany gives the following indications for operation: 1. If more than one branch is affected. 2. If painful area receives filaments from branches near exit from head (cranial cavity), *e. g.*, tongue, temporal region. 3. If pain is not an expression of constitutional disease. 4. If cause central to ganglion does not exist. 5. If other measures have failed to relieve.

Operation: Removal of lower two-thirds of ganglion, together with second and third branches as far as their foramina of exit from skull all in one piece, so as to be certain of amount of tissue taken.

Upper one-third of ganglia and first branch should not, for the present at least, be excised for neuralgia.

CONCLUSIONS.

From clinical reports, my experiments and personal clinical experience I conclude as follows:

1. That trifacial neuralgia, tic douloureux, is not the result of a pathologic entity which has so far been definitely determined.

2. The tendency after all types of operation, with the possible exception of removal of the sensory root behind the ganglion, is to recurrence of the disease.

3. This is probably due to the regeneration of certain nerve elements following the deep operation, and anastomosis and retention following the superficial.

4. Sudden shocks and irritation to the terminal filaments of the trifacial not infrequently cause an immediate and occasionally a permanent cessation of the neuralgic pain.

5. The mortality from the superficial exsections is practically *nil;* the mortality from the intracranial operations is great. The hazard is greater than should be taken in a disease which does not in itself jeopardize life.

6. Injections of osmic acid in 1 to 2 per cent. solution into the nerve trunks relieve the pain immediately and in a large percentage of cases for a long period of time.

7. The injections into the superficial tissue for peripheral neuralgia should be abandoned, as the nerve trunks are easily located, and there is no danger of superficial necrosis following such operation.

8. It should never be injected into a motor nerve or a motor nerve area and, therefore, never into the spinal nerves except in amputation stumps.

9. It produces a local necrosis of the tissue into which it is injected and even of the wall of the foramen. This necrosis does not suppurate unless the area is exposed to mouth infection. In that case the suppuration often continues for weeks, draining into the mouth, giving no special inconvenience, and in no way interfering with the final result.

10. The best results are obtained with a 1½ to 2 per cent. solution: this should be injected in many places into the nerve trunk and also into the foramen.

11. All of the nerve branches should be injected—the palatine, lingual, mandibular, superior maxillary (infraorbital), and supraorbital. They can all be exposed through mouth incisions, except the supraorbital. Many times there are three or four divisions of the supraorbital and they should be searched for carefully and each injected. Occasionally it is necessary to inject the auricular branch. The posterior palatine is not so difficult to inject as one would at first imagine.

12. The foramina can and may be injected without anesthesia or incision. The procedure is quite painful, however, and is not certain in its results.

13. The injections can be made with local or general anesthesia. I prefer the general.

14. The injection is free from danger.

15. Judging theoretically from the experience with incisions, resections and ganglion operations, the relief *should not be permanent after the injection of the osmic acid.* From clinical experience up to date, however, and particularly from Mr. Bennett's showing, the fact is that many cases *are* permanently cured. Time alone must determine the final result of this treatment. Its ease of application, its *nil* mortality, and its immediate results forcefully commend its use.

100 State Street.

DISCUSSION

ON PAPERS BY DRS. SHERMAN, FRAZIER AND MURPHY.

DR. CHARLES K. MILLS, Philadelphia—For many years I have had an opportunity of observing many cases of tic douloureux. With the exception of the osmic acid treatment, I have had my cases treated by all forms of surgical procedure. In order that you may have pain in the fifth nerve or anywhere else three things are necessary: 1, Peripheral sensory irritation; 2, channel of communication, and, 3, cerebral centers for the conscious recognition of pain. It does not matter what the pathology of this disease is. The essential thing in its surgical treatment is the complete separation of the cerebral centers concerned with sensations from the periphery. I believe that the best method of treatment is either extirpation of the gasserian ganglion or section of the sensory root, but I am somewhat unsettled which should receive the preference. However, it matters little which is done if the operation is performed successfully. In some cases, perhaps, the sensory root operation is better on account of the effect on the eye from the gasserian operation. My reason for not favoring the osmic acid treatment is that I am usually not inclined toward any peripheral treatment. Experience shows that when one branch of the fifth nerve is involved, sooner or later others, and perhaps all, will be implicated.

DR. WILLIAM G. SPILLER, Philadelphia—As to the pathology of tic douloureux, I have had an opportunity of examining many gasserian ganglia, probably about 15, removed at operation, and have always found degeneration. It matters little whether the disease begins in the peripheral nerve fibers or in the ganglion, because it can not exist long in the former without affecting the nerve cells of the gasserian ganglion. The alteration sooner or later involves the whole nerve structure, including ganglion and peripheral nerve fibers. The relief of pain after resection of a peripheral branch does not prove that the lesion is primarily in the peripheral branch. The cells of the ganglion are altered by the resection and their function is partially impaired, and until they recover pain is not likely to return. I was surprised to hear Dr. Murphy say that there was no ascending or descending degeneration in his experimental cases. I do not understand how axis cylinders can be destroyed without causing secondary degeneration. The method recommended by Dr. Murphy is most valuable if the relief is permanent. The action of the osmic acid is to cause destruction and hardening of the tissue into which it is injected. Osmic acid is one of the best hardening agents, and when injected into a nerve it probably makes regeneration more difficult. Dr. Sherman's case is important, but it is not at all a typical one. He states that pain returned on the third day, and I can not understand how the sensory root could have been entirely divided if pain returned within so short a time. Very few gasserian ganglia have been entirely removed without relief of

pain; indeed, I know of only two cases, and I am skeptical concerning these. Sensation sometimes returns in peripheral nerves before motion, but if there were a regeneration of the fibers of the sensory root it is probable the fibers of the motor root would also regenerate, and there would be some return of motion in the muscles of mastication, which I have not heard was present in Dr. Sherman's case. It would be well to resect a piece of the sensory root to make sure that division is complete. The operation on the sensory root is difficult and very bloody, and one may easily be deceived regarding complete division of the root. In the dogs examined by Dr. Frazier and myself I found that the external part of the sensory root was more frequently degenerated than the internal part, and that the fibers of the external part of the root were represented in the posterior part of the descending spinal root. Combining the results of my studies with those of Van Gehuchten, I believe we may say that the fibers of the third division of the trigeminus are represented in the external part of the sensory root and in the posterior part of the spinal root, and that when the anesthesia is of very limited area after an operation on the sensory root, it will be found in the distribution of the third division, and that this indicates that only the outer part of the sensory root has been injured at the operation.

DR. ROBERT F. WEIR, New York City—The osmic acid treatment failed in my hands many years ago, and I do not see how it is any better than the resection of a certain portion of the nerve. The nerve is destroyed by the acid, as would be the case with a resection. The intervention of gutta-percha tissue between the nerve ends, or under the dura, to prevent adhesions has been tried by myself with failure as a permanent result. I have also employed gold leaf with the same intent. In one case of trephining I had put in a small gutta-percha sheet; the wound healed, but headache resulted and persisted. On cutting into the scar several months later I found that this gutta-percha tissue was still there, and that it was finely perforated, allowing in many places adhesions to pass through it. This condition was also observed in another case. I am, as others have been, driven to the conclusion that for the permanent relief of these trigeminal neuralgias we are bound to resort to an intracranial operation, which has a very serious risk, for we are resorting to an operation that brings with it a risk of death for a disease that has no such risk. I yet believe it well to try the lighter operations first.

DR. J. SHELTON HORSLEY, Richmond, Va.—Ten years ago it was held by many surgeons that the spinal cord after being injured, particularly in its upper portion, never regenerated, but Harte and Stewart reported a case where this view was shown to be incorrect, as the patient recovered quite satisfactorily after complete section of the cord at the level of the seventh dorsal vertebra. We must consider the idiosyncrasy of the patient. In some individuals regeneration of nervous structures takes place, whereas in others there will be no attempt at repair, though the lesion may be identical in both instances. There seems no way of telling whether a nerve in a given individual will repair until an actual trial is made. I have done two operations on the gasserian ganglion, and both resulted satisfactorily. In one case the whole ganglion was removed intact. The external carotid was ligated, which lessens hemorrhage and adds to the confidence of the operator. The Cushing operation gives a very satisfactory exposure if carried farther under the base of the skull, somewhat after the method of Doyen. I have tried to mitigate the shock by the hypodermic injection of cocain into the ganglion before division of the nerves, but the patient suffered shock to some extent, the blood pressure dropping to 80. I do not know how much good the cocain did. In the second case, the Abbé operation was performed. Only the second and third divisions were involved here. There must be a legitimate field for extirpation of the gasserian ganglion, as Spiller and others have demonstrated that in nearly every instance after persistent tic this ganglion shows pathologic lesions. Milder operations may sometimes succeed, but they can not supplant the more radical procedure.

DR. JOHN B. MURPHY—I have had many cases of tic, and I know the "real thing" when I see it. I am not a novice in the work. I lost three cases out of eleven following the operation of ganglion removal. Dr. Spiller's experience in pathologic findings has not been supported by others. I had one case from California in which every branch was involved, and so severe was it that a doctor had to accompany her to Chicago for the operation. I did the injection method and completely relieved the patient by the end of the third day. As to what Dr. Weir says about nerve regeneration, there are some things that we do not understand. At times, in contusions or pressure on a nerve without division, some change occurs to interfere with the re-establishment of communication between the periphery and the centers and prevents the return of function. I hope to get the same result from the injection method and we are justified in this hope by Mr. Bennett's experience, extending over a period of six years. It is my opinion that the results should not be permanent, but the clinical test is the final test, and so long as I am able to relieve these cases for even a year or two by this simple and safe procedure I will not again resort to the ganglion removal. The ganglion removal is ideal, but the hazard is too great except as a *dernier ressort*. The injection may be renewed with benefit, as shown by Bennett's and my cases.

DR. H. M. SHERMAN, San Francisco—As to the question of the return of pain referred to by Dr. Spiller, its return and persistence suggests strongly the idea that the disease and the cause of the pain is central. The persistence of the paralysis shows that I had surely cut all the sensory fibers, but the return of sensation led me to think that there was some error in the proposed technic of the operation. After the second operation we have permanent anesthesia, but still a persistence of the pain. In this second operation the ganglion was removed.

DR. C. H. FRAZIER—With reference to the occurrence of facial paralysis as a complication in the operation on the gasserian ganglion, I have explained it in one of two ways; it may be due either to the forcible retraction of the musculocutaneous flap with a metal curved retractor, the tip of which may easily exert enough pressure on the facial nerve to cause at least temporary disturbance of function, or it may be due to too forcible and prolonged elevation of the temporal lobe. The time has come when we should discard the percentages which have been estimated from the series of cases operated on before the adoption of the more perfect methods of modern technic. The operation on the ganglion itself, the central or peripheral roots, is no longer a "kill or cure" measure. I am not prepared to accept the report which Dr. Sherman has made as conclusive evidence against the rationale of the operation which I have advocated. I still believe regeneration of the sensory root will not occur after its division, and, therefore, that there can be no recurrence such as Dr. Sherman has reported. It is more than probable in this case that the root was not entirely divided. It is a source of disappointment to me that such a report should have been made, inasmuch as it will throw some doubt on the accuracy of our observations. The operation was based on the results of very careful and painstaking experimental investigation by Dr. Spiller and myself, and not until we obtained encouraging results in these experiments was the operation applied to the human subject. I believe the operation to be established on a sound and scientific basis, and the results of our clinical experience would seem to bear me out.

A New Cure for Drunkenness.—The Norwegian authorities, who do not make light of the subject of alcoholism, are using an original method of curing drunkards of their vice, according to *Le Bulletin Médical*. The patient is placed in a room under lock and key, and all outside communication is cut off. His nourishment consists in great part of bread soaked in port wine. The first day the drunkard eats his food with pleasure, and even on the second day he enjoys it. On the third day he finds that it is always the same, on the fourth day he becomes impatient, and at the end of eight days he receives the wine with horror. It seems that the disgust persists and that this homeopathic cure gives unexpected results.

POISONING BY WOOD ALCOHOL.

CASES OF DEATH AND BLINDNESS FROM COLUMBIAN SPIRITS AND OTHER METHYLATED PREPARATIONS.

FRANK BULLER, M.D.
MONTREAL.
AND
CASEY A. WOOD, M.D.
CHICAGO.

(Continued from page 977.)

CASES 27 and 28.—(From Dr. Frank A. Grawn, Munising, Mich.; Dr. T. W. Scholtes, Munising, Mich.)

J. B., aged 37, nationality French, occupation woodsman, date of death, Nov. 14, 1898. L. B., aged 40, nationality French; occupation woodsman, date of death, Nov. 14, 1898. Symptoms, in both cases, great suffering from pain in abdomen, especially in region of stomach, vomiting, severe headache, total blindness and severe prostration. The postmortem findings consisted principally of a marked congestion of the gastric mucosa, also of liver, kidneys and vessels of brain. The conclusions arrived at were that while the local changes produced by this alcohol were quite prominent, death was undoubtedly due to the systemic effect of the poison. These two men who died from the poisoning were brothers. They came to Munising, went to a saloon and, as they stated, called for "good" alcohol. The saloonkeeper says he understood them to say "wood" alcohol. He not having alcohol in stock, went to a drug store and bought two quarts of wood alcohol for each. He delivered it to them and they left town in the evening and walked to camp. The alcohol was not labeled "poison." They both reached camp and were soon taken sick and Dr. G. M. Gould, formerly of Munising, was called to attend them. He found they had drunk a little less than two quarts between them. One of the men died about fourteen hours after they bought the alcohol and the other about seventeen hours after.

CASE 29.—(From Dr. Herbert Harlan, Baltimore.)

Storekeeper in Dorchester County, Maryland, went on a spree with Jamaica ginger. He became entirely blind, but is so ashamed of his performance and, believing his case to be hopeless, declines to see an oculist or to discuss his case with one. Dr. Harlan obtained the report from his family physician, whom he knows to be a competent and reliable observer.

CASE 30.—(From Dr. Herbert Harlan, Baltimore; Dr. P. B. Barringer, Charlottesville, Va., and Dr. Francis Lee Thurman, Keswick, Va.)

W. H. J., aged 38, a respectable and well-to-do merchant of Keswick, Va. Some five years ago, on a certain Sunday (July 15, 1899), not feeling well, took a drink of Gilbert's Jamaica ginger. After taking one dose he felt no better and took a second, later in the day taking several others. On the following day he took one more dose, drinking in all two or three ounces of the "ginger." On Monday he complained of nausea, weakness, vomiting, intense headache, giddiness and, later in the day, became blind. The blindness increased so much that in three days he could not perceive light from darkness. Then his vision gradually improved so that in another ten days it reached the acuity it at present exhibits. There has been no change in the fundus conditions during the past four years. He was then treated by Dr. Thurman and saw an oculist in Richmond, Va., whose name he did not recall. Two years afterward, when examined by Dr. Harlan, he had marked optic nerve atrophy, with some vision in the periphery of each field sufficient to allow him to get about in familiar localities.

Analysis of the Jamaica ginger taken by this patient showed that it was 70 per cent. wood alcohol.

CASE 31.—(From Drs. Alvin A. Hubbell and Lucien Howe, Buffalo, N. Y.)

Dr. B. W. S., Stockton, Chautauqua County, N. Y., consulted Dr. Hubbell in April, 1901. In March, 1899, he accidentally drank about an ounce and a half of wood alcohol. This dose was repeated the next two days—three doses in all—after which his vision became dim in both eyes. He could see well enough to get about, but was unable to read print. V. R. = 5/30, and no Jaeger; V. L. = perception of light. As Dr. Hubbell saw him once only and as he failed to keep his promise to return, the visual fields were not measured. The fundi showed well-marked atrophy of both discs. Dr. Howe saw him before this, on June 12, 1899, and adds that, at that time, the patient thought his sight in the right eye had gradually improved. The right pupil was torpid, arteries small, discs pale; V. = 20/50 and Sn. three, field slightly contracted. In the left eye the same condition, only more exaggerated. Disc decidedly atrophic, V. = fingers at six feet; Sn. 20 at twelve inches; field regular, about two-thirds normal limit. In a letter to Dr. Howe from the patient six months later he reported his condition to be about the same.

CASE 32.—(From Dr. M. A. Hughes, Salt Lake City, Utah.)

J. A., aged 40, stone mason, consulted Dr. Hughes in January, 1902, for a sudden attack of almost complete blindness. The history showed that he, with several companions, had drunk freely of wood alcohol on a certain Sunday. When he awoke next morning he found that he could scarcely see. On examination his vision was reduced to 10/60 in the right eye and 10/40 in the left. Under increasing doses of strychnia, given hypodermically, his sight improved slightly. A year after the poisoning he was, however, unable to resume his trade and the damage to sight seemed permanent.

CASES 33 and 34.—(From Dr. Edwin E. Jack, Boston, Mass.)

"I have seen two cases of atrophy following the ingestion of methyl alcohol in the crude form. One, J. P., aged 71, old soldier, bought a pint and drank part of it. Both had a long period of insensibility and both were blind on regaining their senses; a neuritis followed by rapid atrophy."

Although Dr. Jack was not able to find, in his hospital records, the detailed case histories of these patients, there is every reason to believe that they have not been published before and that they have not been duplicated in this report.

CASE 35.—(From Dr. Edward Jackson, Denver, Colo.)

A woman, addicted to alcoholism, resorted to a jug of wood alcohol that her employer kept for a lamp. The quantity taken is uncertain. She suffered from severe gastrointestinal irritation, vomiting and impairment of vision. Next morning all "looked black," but she could see a light brought into the room. In three days vision began to improve rapidly. On the eighteenth day V. = 4/60, R. and L. The optic discs were red, hazy and slightly swollen, their outlines hidden. The retinal vessels not much altered. She and her daughter said that before taking the wood alcohol she could thread the finest needle. She was not seen after the twentieth day.

CASE 36.—(From Dr. J. H. Jamar, Elkton, Md.)

A drunken male tramp, aged 37, having procured a quantity of wood alcohol, ostensibly for a different purpose, proceeded with a companion (whose case is elsewhere recorded), to go on a spree by the wayside. His female companion promptly died, but he survived, was placed in jail, there being no hospital in the city, and came under Dr. Jamar's care. The patient was found to be in a highly excited, delirious condition; face purple; decided odor of alcohol about him. Emetics followed by calmatives were prescribed and the patient began to improve. His eyesight was greatly affected for the first day or so, but improved in a few days, when he was discharged. The final outcome of the case as regards vision is not known.

CASE 37.—(From Dr. Dryden H. Lamb, Owosso, Mich.)

J. F., male, aged about 25, one of three men who together went on a spree. After having absorbed all the ordinary alcoholic beverages they secured some Columbian spirits and drank a considerable quantity of it; exact quantity is not known. One died shortly afterward and the others were very ill, both of the survivors suffering from amaurosis. One case was treated by Dr. Lamb, the other elsewhere. There was marked contraction of the fields in both eyes and vision was permanently reduced to 20/100 and 20/80, right and left eye respectively. Previous history good.

CASE 38.—(From Dr. Dryden H. Lamb, Owosso, Mich.)

J. B., aged 30, imbibed an unknown quantity of Columbian spirits and in a short time was totally disabled from loss of eyesight. R. E. V. was 20/200; L. E. V. was 10/200, with

narrowing of fields. Condition at present but slightly improved. Optic atrophy.

CASES 39, 40 and 41.—(From Dr. Dryden H. Lamb, Owosso, Mich.)

Owing to destruction of complete records of these three cases (during two and one-half years' absence on military duty) Dr. Lamb is unable to give details of the visual fields, fundus changes, etc., but has a distinct recollection of the main facts, which point conclusively to methyl alcohol blindness. So far as Dr. Lamb knows, the cases are here published for the first time. About four years ago three Swedes, addicted to alcoholic debauches, purchased deodorized wood alcohol because it was cheap, reduced it with water and drank "not a large quantity" of it. The eyesight was affected in each instance and it was on account of this failure of vision that Dr. Lamb saw them. Central vision was greatly reduced, the visual fields were much contracted and the fundus pictures were those of optic atrophy. Under treatment vision improved somewhat in all the three instances, and when they could readily get about the men left town and have not been seen in Owosso since.

CASE 42.—(From Dr. Eugene Richards Lewis, Dubuque, Iowa.)

J. C., aged 38, chronic drunkard and loafer about saloons; also heavy smoker, with a "specific" history. At noon one day, while prowling about the house of a woman he had recently married, he discovered a large bottle of wood alcohol, of which he drank an unknown quantity. Toward evening Dr. J. S. Lewis of Dubuque was summoned and found the man totally blind. The patient died during the night, so that a fundus examination, which was arranged for the following morning, could not be made.

CASE 43.—(From Dr. F. Park Lewis, Buffalo, N. Y.)

M. F., aged 49 years, had used alcohol for thirty years and was in the habit of taking it to excess whenever opportunity offered. She was an inmate of the Erie County Hospital in the year 1900. One afternoon, finding a large cup half filled with what she supposed to be alcohol, and which was in fact methyl alcohol, used for cleaning purposes, she drank the whole of it in two draughts with an interval of about half an hour, the total amount consumed being about four ounces. After a short period of excitement she passed into a stupor which lasted until late the next morning when, on being aroused, she found herself absolutely blind, and from that period until the present time, about four years, she has had no perception of light whatever.

She did not come under the observation of Dr. Lewis until the beginning of his service, some six months after this event. Then both optic nerves were found to be atrophic and the retinal vessels reduced in size. The woman is still an inmate of the County Hospital. She has a catarrhal conjunctivitis, but otherwise is apparently in good health. No consequences seem to have followed the toxemia except the almost immediate complete and permanent blindness.

CASE 44.—(From Dr. J. A. Lippincott, Pittsburg, Pa.)

F. C., aged 47, laborer, drank a large quantity of wood alcohol and within twenty-four hours sight began gradually to fail and was never regained. No light perception. Pupils slightly dilated and rigid. The ophthalmoscope shows clear media. Discs a grayish silvery white, with sharply defined margins. Upper and lower temporal veins of normal caliber. All other vessels almost obliterated or reduced to mere threads.

CASE 45.—(From Dr. J. A. Lippincott, Pittsburg, Pa.)

J. R., aged 31, oil well driller, drank 24 ounces of Jamaica ginger between 2 and 3 o'clock in the afternoon. At midnight he awoke with severe browache and sight much impaired. In a few minutes he became stone-blind, in which condition he has remained ever since. External appearances are normal except that the pupils are dilated (5½ mm.) and not responsive. Tension slightly elevated, especially on right side. Eyeballs tender to touch, especially above. No light perception.

Ophthalmoscope examination: R. E., media clear; outer margin of disc perfectly sharp; upper margin very much blurred, the blurring extending upward, with radiations over the retina for fully a disc diameter, but more pronounced, and extends downward 1½ disc diameters. In this area the retina is edematous and the vessels are interrupted in places. Inner side of retina slightly hazy. Macular region normal in appearance. L. E., disc slightly hazy and surrounded by a hazy zone about 1½ disc diameters wide. Retinal vessels slightly tortuous. Knee reflex absent.

Treatment: Iodid of potassium in large doses; leeches to temples; pilocarpin sweats daily; rest in bed; strychnin to be given a little later.

Feb. 25, 1901. V. R. E. = light perception. V. L. E. = fingers close to eye. Pupils still dilated, but responsive, though sluggish. R. E. disc bluish-white, with boundaries pretty sharply defined. Retinal vessels about two-thirds of normal size. L. E., swelling of nerve head much reduced, leaving central physiologic excavation white; rest of disc is of a grayish-white color. Pilocarpin stopped. Iodid and strychnia continued.

April 23, 1901. He states that about five weeks ago could see well enough to walk about, but about that time the sight began to fail, until he became entirely blind. Dec. 10, 1901, pronounced atrophy of optic discs.

CASE 46.—(From Dr. R. S. Magee, Topeka, Kan.)

Mrs. S. P., aged 33, Topeka, consulted Dr. Magee on July 8, 1901. The patient had always had good vision until four weeks previous to this date. She suffered from painful menstruation, for which she was in the habit of taking whisky. A month before consulting the physician she discovered she had no whisky in the house, so drank instead a medicine glassful of wood alcohol diluted with the same quantity of water. This dose was taken in the evening just before retiring. The next morning she noticed decided dimness of vision, unaccompanied by pain in either eye. Dr. Magee found vision in the right eye to be 16/100; left eye 4/200. The mirror showed "woolly" discs and the remains of small hemorrhages in both fundi. He had an opportunity of seeing her once more, at a later date, and found central vision worse and gradually failing.

CASE 47.—(From Dr. J. G. McKinney, Barry, Ill.)

James Riffle, jeweler, drunkard, in the absence of whisky drank extract of lemon, which produced blindness, followed by death in less than two days. The extract of lemon was examined by an expert chemist and found to be composed almost entirely of wood alcohol.

CASE 48.—(From Dr. J. E. Minney, Topeka, Kan.)

As reported in another column, a farm hand, one of nine Poles, living in this vicinity, who indulged in a debauch and drank nearly two gallons of methyl alcohol before the termination of the spree, became blind. This was during the year 1889. The loss of vision in this instance was unequal, the one eye being much more affected than the other, although they both exhibited the fundus signs of optic nerve atrophy.

Dr. Minney saw the case first about ten weeks after the intoxication. The man was then able to go about the farm and do work not requiring good vision. The last report from him was that there was no improvement.

CASE 49.—(From Dr. T. W. Moore, Huntingdon, W. Va.)

G. S., aged 36, baker, was first seen Jan. 23, 1904. Drank an unknown quantity of wood alcohol Sept. 15, 1902, and was totally blind thereafter for nearly three weeks. Both discs are now pale, right one decidedly so. Vision: R. E., fingers at 12 inches; L. E., with lenses, 20/40.

CASE 50.—(From Dr. T. W. Moore, Huntington, W. Va.)

S. T., aged 45, white, house painter, married. Uses tobacco and alcohol, the latter to excess. Had been working in a frame factory and using wood alcohol in mixing his paints. On Oct. 6, 1900, he drank one-half pint of the methylated spirits. This was followed the next day by other alcoholics. Vomited excessively all that night, and on the following morning was totally blind. Had flashes of light before his eyes quite frequently; no pain at any time in eyes, although slight frontal headache. On October 18 Dr. Moore saw him for the first time. He had perception of light and said he could see moving objects, although he subsequently failed to do so in the physician's of-

fice. Pupils dilated and did not respond to light. Both discs were slightly blurred on the nasal side; arteries normal, veins engorged and tortuous. One year later the patient was still totally blind, and both discs were white.

CASE 51.—(From Dr. H. Moulton, Fort Smith, Ark.)

In addition to the cases reported by him in the *Ophthalmic Record* for July, 1899, and November, 1901, Dr. Moulton submits the following case history: S. W. McK., age 52, of San Bois, Ind. Ter., drank, April 22, 1902, four bottles of essence of lemon. Next day he began to lose his eyesight, and on the third day he was totally blind. After three or four days he began to see again. He reported that, as treatment, "his doctor made him sweat." On May 23, 1904, one month after the poisoning, Dr. Moulton found vision in his right eye to be 10/100; in the left, finger-counting at three feet. The ophthalmoscope showed temporal pallor of the nerve heads. The pupils were abnormally dilated. Unfortunately, the patient did not return, as arranged, to have his visual fields measured.

Dr. Moulton remarks that cases of poisoning from adulterated drinks are very common in Indian Territory.

He believes that at least 50 deaths have occurred in that country from this cause.

The sale of ordinary alcoholic beverages is strictly prohibited there by the United States Government, and thirsty souls are perforce obliged to drink anything containing alcohol, Jamaica ginger, witch hazel, or even "peruna."

CASE 52.—(From Dr. F. G. Murray, Cedar Rapids, Iowa.)

The patient was a cook (male) in a lumber camp in the summer of 1902, in northern Michigan. Previous to taking this job he had been indulging heavily in liquor, but had not had access to it for a number of days previous to his arrival at the camp. There was no liquor accessible nearer than the railroad station, 30 miles away. He seemed to have normal vision and command of his muscles at this time, for he did a little hunting and brought down game with a rifle at a moderately long range. This was the first of the week, in June, 1902. To satisfy his craving for alcohol, he commenced drinking a proprietary "liniment for both internal and external use" kept in the "van," or camp store. In the space of three or four days he drank at least 72 ounces of this remedy. He became weak and somewhat incoördinate in gait, and his eyesight began to fail, so that by the end of the week he could barely distinguish hand movements before his eyes. The pupils were widely dilated; the skin cool and moist. No ophthalmoscopic examination was made, and Dr. Murray does not remember whether there was or was not ptosis. The subsequent history of the case is not known. The patient went to Marquette, Mich., presumably to the hospital there. It was reported that he was seen some time after on the streets, with improved eyesight. There were, in addition to the "liniment," some common extracts used in cooking about the camp kitchen, but there is no evidence that he drank any of them. If he did, it was only a small amount.

The liniment referred to is largely used in the camps of that region (near Sault Ste. Marie) to "sober up" on, and it is a common belief among the woodsmen that free indulgence in it will cause blindness.

CASES 53, 54, 55.—(From Dr. Charles A. Oliver, Philadelphia, Pa.)

"I have had three indisputable cases: two at Wills Hospital and one in private consultation. Of the two public cases, one had his central vision reduced to 1/8 of normal; the other to 1/15, both by reason of large positive scotomata. Both patients, men of 30 and 35 years of age, were rendered practically useless for continuance of their daily work as skilled laborers. The private case, an important man in a not far distant community, was compelled to discontinue a remunerative employment for an extremely precarious and uncertain agency.

"The cases I saw were primarily mine, were never published, and will not interfere with Dr. Buller's statistics (of published cases). The histories of the public ones are buried in my special Wills Hospital case books. I used them alone for class demonstration. One case, I remember, was wood alcohol in coffee. I do not remember the amounts ingested."

CASE 56.—(From Dr. S. A. Oren, Lewiston, Ill.)

Frank H., aged 48, laborer, a habitual drunkard, had been on a spree, and after drinking freely of "lemon essence" was found, Nov. 4, 1903, in a barn unconscious. Dr. Oren saw him shortly afterward and endeavored to restore him, but without avail. He recovered sufficiently to articulate, but became delirious before he died, within 24 hours after finding him. He was quite blind before death. His pulse was very weak and did not respond to stimulants.

CASE 57.—(From Dr. C. E. Patterson, Grand Rapids, Mich.)

Mr. H., aged 17, an habitual drinker of spirits, consulted Dr. Patterson several years ago on account of the nervous symptoms engendered by this habit. He used to buy the pure alcohol, dilute it with water and drink it to complete intoxication. On one occasion a mistake was made, and he was given wood alcohol (probably deodorized), and, as usual, proceeded to imbibe it to full drunkenness. This was on a certain Friday night. He awoke next morning totally blind. He recovered from the other effects of his spree, but has never regained his eyesight, there being complete destruction of both optic nerves.

CASE 58.—(From Dr. J. A. Patton, Stilwell, Ind. Ter. Dr. T. S. Williams, Stilwell, Ind. Ter.)

P. F., aged 24, single. Dr. Patton saw him first Feb. 28, 1904, 9 a. m. He had vomited since 10 o'clock the night before, after drinking six or seven bottles of lemon extract. It was afterward learned that he had been drinking lemon extract for three or four days. Pulse, 80; temperature normal; respiration, 25; capillary circulation not good. Complained of some burning pain in stomach. Could see and recognize persons within a few feet of him, but at a distance of 10 or 12 feet, as he expressed it, "everything looked white." At 1 p. m. he was totally blind. Respiration very rapid; partly unconscious. Pulse, 65 or 70, but full. At 3 p. m., unconscious; pulse slow but strong; great dyspnea; skin cold and clammy. 5 p. m.—Had several severe convulsions. Died at 5:40 p. m., Feb. 28, 1904.

Dr. Patton had the lemon extract drunk by this man and by the patients whose cases are subsequently detailed by him in this report analyzed. It was found to consist largely of wood alcohol.

CASE 59.—(From Dr. J. A. Patton and Dr. T. S. Williams, Stilwell, Ind. Ter.)

W. H. H., aged 60, married, merchant. He had drunk lemon extract, with others, for three or four days. Complained to friends on the afternoon of February 29 that "everything looked white" and that he couldn't see well. Had vomiting and other gastrointestinal symptoms, such as severe cramps. He went home to his wife, who cared for him until 4 a. m., March 1, when physicians were called. At that time he was totally blind, unconscious and had a slow pulse; respirations labored. Died after convulsions, 8 a. m., March 1, 1904.

CASE 60.—(From Dr. J. A. Patton, Stilwell, Ind. Ter., and Dr. J. T. Clegg, Siloam Springs, Ark.)

S. T., aged 34, married. Had drunk lemon extract for three or four days. On the morning of Feb. 28, 1904, he went to Siloam Springs. He was apparently in good health and sober during the day. About 7 or 8 o'clock p. m. he went to the hotel and complained of blindness, dyspnea and pain in the stomach. Dr. J. T. Clegg of Siloam was called, who gave the following history: Respiration very labored, with a prolonged expiratory effort; pulse slow (48 to 50). Other symptoms closely resembled the foregoing case, with the exception of the muscular spasm; he had no convulsions. Died at 1:15 a. m., Feb. 29, 1904.

The lemon extract drunk by this patient was analyzed and found to contain wood alcohol.

CASE 61.—(From Dr. W. T. Salmon, Oklahoma City, Okla.)

H., aged 46, December, 1898. Drank alcohol, and in 12 hours was very dizzy, vomited a great deal, headache, eyeballs sensitive to touch, blind in three days, optic neuritis followed by atrophy.

CASE 62.—(From Dr. W. T. Salmon, Oklahoma City, Okla.)

Miss F., aged 19, lived in Indian Territory, February, 1899. Had been drinking cologne spirits. Suffered much with headache, eyes tender, gastric disturbances; blind in five days from time when she first noticed dimness of vision. Papillomacular atrophy.

CASE 63.—(From Dr. W. T. Salmon, Oklahoma City, Okla.)

H., aged 63, April, 1899. Drank "alcohol." Violent headaches and vomiting. Improved under pilocarpin and potassium iodid. Relapsed and vision was reduced to counting fingers in the left eye at three feet. R. E. = 20/200. Central scotoma; optic atrophy.

CASE 64.—(From Dr. W. T. Salmon, Oklahoma City, Okla.)

W., Indian Territory, aged 54, May, 1900. This man was one of a party that drank Columbian spirits on Sunday morning. Two stopped at a friend's house for dinner, ate heartily of wild turkey and never noticed any bad symptoms. Williams, however, continued his journey on horseback, riding nearly all day, taking three more small drinks (half a pint), and next morning had headache, dimness of vision, vomiting and was entirely blind in 48 hours. He improved slightly under pilocarpin and strychnia.

CASE 65.—(From Dr. W. T. Salmon, Oklahoma City, Okla.)

K., aged 43, October, 1900, Indian Territory. Protracted spree with Jamaica ginger, lemon extract and "peruna." Noticed one morning that a cloud was before his eyes. He became blind in six hours afterward, had headache, vomiting and other gastrointestinal symptoms. The final outcome was optic atrophy, with narrowing of the retinal vessels.

CASE 66.—(From Dr. W. T. Salmon, Oklahoma City, Okla.)

S., aged 56, October, 1899. Had been dyeing and cleaning clothes in alcoholic preparations. No evidence that he had drunk the methylated mixture. Headache and vomiting. Vision reduced to perception of light in ten days from first symptoms. Under pilocarpin he recovered most of his sight in 61 days.

CASE 67.—(From Dr. W. T. Salmon, Oklahoma City, Okla.)

E., aged 24, January, 1901, Indian Territory. Drank one-half pint of "bitters." Next morning had headache, dimness of vision, vomiting, etc. In 48 hours V. R. E., counting fingers at three feet; L. E. = 20/200. Treatment consisted of pilocarpin, followed by strychnia. When last seen patient's sight was almost normal.

CASE 68.—(From Dr. W. T. Salmon, Oklahoma City, Okla.)

M., aged 29, June, 1902, Indian Territory. Drank one pint of Columbian spirits. This was followed by vomiting and headache. Eyes tender on pressure. Result, much diminished vision, central scotoma and contracted fields.

CASE 69.—(From Dr. W. T. Salmon, Oklahoma City, Okla.)

S., aged 34, August, 1902. This man drank four bottles of Jamaica ginger, and was found in a semi-comatose condition and totally blind. At first improvement occurred, but in a few days there was a relapse, followed by optic atrophy.

CASE 70.—(From Dr. Norman B. Saunders, Schenectady, N. Y.)

McA., aged 38, single, steamfitter, admitted to New York City Hospital, Aug. 5, 1902, in a condition of delirium due to alcohol. Under the use of large doses of strychnin and high intestinal irrigation he recovered and was subsequently employed as ward attendant. On the morning of Sept. 17, 1902, he was sent to the superintendent's office on account of intoxication the previous evening. He left the ward, but was soon brought back in a state of collapse by two patients. Pupils moderately dilated. Breathing labored and deep. Face flushed. Skin bathed in sweat. Was very restless. He complained of pain in stomach, was nauseated, and said he felt as if he was going to die. He then told the nurse that he had been drinking wood alcohol. Pulse quick and feeble; heart sounds very feeble. Patient said everything looked black; he was actually blind. Asked for water and stretched out his hand, grasping for water. Continued to moan and was restless. Soon had a spasm of muscles of clonic character, the forearm being flexed and drawn right to the body; cyanotic during spasm; in a few minutes relaxed. In absolute coma. In five minutes another spasm; entire body stiffened; no opisthotonos. Death. The autopsy revealed nothing of importance.

CASE 71.—(From Dr. J. W. Scales, Pine Bluff, Ark.)

H. E., male, aged 46, a hard drinker. Complained of poor vision for a year previous to May, 1903. One evening in the course of one hour drank six ounces of wood alcohol and two of brandy. Felt "soggy," but ate supper, got up next morning and ate his breakfast and later his dinner, but about 3 p. m. (22 hours after drinking the alcohol) vomited severely, and at 5 p. m. he went to bed. He slept 24 hours, and on awakening found that he was entirely blind, and remained so for 36 hours. He then saw dim shadows with the left eye. In a month the right eye recognized hand movements. Vision continued to improve slowly for six months, but remained unaltered afterward. At the present time, R. E.=1/20, L. E.=1/10. No lens improves vision. Fields greatly contracted, irregularly concentric; all color perception lost. Optic discs very white, with sharp edges. Pupils, very sluggish reaction to light. Nine months later vision was unchanged, despite treatment, and the retinal vessels were narrow, as if there was some endovasculitis.

CASE 72.—(From Dr. J. W. Scales, Pine Bluff, Ark.)

M. O'C., aged 45, railroad section "boss," in December, 1900, drank three bottles of Jamaica ginger, followed by a smaller quantity of bay rum and Hostetter's bitters. During the night he was seized with violent headache and intestinal irritation. In the morning he was blind in both eyes, and, although the other symptoms shortly disappeared, he never recovered his eyesight, the blindness persisting until his death from pulmonary disease, two years later.

CASE 73.—(From Dr. K. W. Sneed, Wortham, Texas, and Dr. J. O. McReynolds, Dallas, Texas.)

A negro, barber, a chronic alcoholic, had been in the habit of drinking "almost everything," including "bitters" and other patent medicines, as stimulants. He bought some bay rum made with wood alcohol for use in his business. The druggist warned him of the poisonous character of the mixture, but he seems to have disregarded the warning and imbibed an unknown quantity of it on the night of July 30, 1904. At 5 o'clock next afternoon he complained of vertigo and almost total blindness. The following day at noon, when Dr. Sneed saw him, he was suffering from dyspnea, with respirations 10 a minute and very labored; pupils dilated and irresponsive to light; pulse, 104.

Examination showed no organic disease of heart, kidneys or lungs. On Sept. 3, 1904, his general condition had much improved, but his vision was no better. He could barely recognize the outlines of his room door.

CASE 74.—(From Dr. Eugene Smith, Detroit, Mich.)

April 19, 1903, Dr. Smith was consulted by Mr. A. L. B., aged 20, who stated that Feb. 8, 1903, he drank four or five tumblers of wood alcohol. On February 10 was "unable to see to get around." Dr. Smith found his vision to be only perception of light in the right eye; nerve white; all vessels attenuated. Left eye, V. = 10/200. Nerve waxy-white; vessels attenuated. Did not see patient again.

CASES 75, 76.—(Courtesy of the Surgeon General of the Army.)

A. and B. were admitted soon after noon on July 25, 1898, with symptoms of acute poisoning. Both men were able to walk into the ward, and admitted, when confronted with the query, that they had, in lieu of whisky, drank wood alcohol diluted with water and sweetened. They were but two of a number of privates in this regiment who drank this concoction, but having indulged in it to much greater degree than almost any of the others they were more seriously affected. One of their companions did, however, die in his regimental hospital. The symptoms which these two men presented were gastric pain of an acute character, relieved at times by cessation of the pain, almost persistent vomiting, dryness of the mouth and throat, though the tongue and buccal cavity seemed moist. An inordinate and insatiable desire for water which is characteristic of poisoning cases of this class was noticeable in both men, who drank eagerly the water that was given them, only to vomit it a few moments after its reception into the stomach. Temperature of both men about normal when admitted, and did not rise above 99 at any time. The speech quite coherent, but the eyes with dilated pupils, incapable of recognizing either persons or things only a few feet distant. A., after an awful struggle, in which he tossed about incessantly, crying all the while for water, gradually sank into unconsciousness, in which state he died at 7:30 p. m. the same day. For an hour before death he was almost pulseless, heart dicrotic, and toward the last, Cheyne-Stokes' breathing.

B. died at 2 a. m. on the morning of July 26, after evidencing practically the same effects of the poisoning as did A. His temperature at 9 p. m., five hours before death, registered 93.4, but after the application of hot-water bags rose to 95.3. It is believed that both men died from an acute nephritis, although no necropsy was permitted. Both men, it was learned, had been drinking the wood alcohol for two days before admission, but no alarming symptoms made their appearance until the conclusion of 36 hours' time. A. died six hours after admission, and B. 13 hours after.

Treatment: Before admission strychnin hypodermatically for stimulation, and bismuth and egg albumin as a sedative and an emetic. At First Div. Hosp., strychnin, hot-water bags, friction and emulcents.

CASE 77.—(Courtesy of the Surgeon General and of the surgeon in charge of the post at Fort Terry, N. Y.)

Private T. H., aged 29. On the same night, Feb. 26, 1904, that four other soldiers had drunk methylated bay rum, he was found drunk and put in the guard house. He denied that he had taken any wood alcohol. Two days later he was reported to be in bad condition, and as having drunk some bay rum and Florida water while in confinement. When he was brought to the hospital he was in a state of partial collapse; temperature, 96; pulse, 80, weak; respiration about 12. Was given strych. sulph. gr. 1/20 and whisky 8 c.c. hypodermatically; M. of ol. tiglii in oil per orem; hot applications to body. Bowels not responding in three hours, were emptied by enema, and later freed themselves of oil. Temperature rose to normal in one hour, pulse and respiration becoming stronger. Whisky and strychnin continued till next morning, when man complained of blindness in both eyes; otherwise much improved. As this man had a specific history, he was put on large and increasing

doses of potassium iodid and strychnin. At that time patient could not count fingers at all; light perception remained, but only in lower part of retinæ, the man having to cast his eyes strongly upward in order to see even light. Under treatment this condition improved for about a week, when it remained the same, though at this time he could count fingers at about 18 inches and could tell time on large-faced clock by putting face about 1 inch from face of clock and hunting each hand separately. April 15, as he showed no further signs of improvement, application was made to have him discharged from service. His retinæ at this time were congested and edematous, but the visual field was not tested, as he could not see sufficiently well for the purpose. Except for the amblyopia, the man returned to a normal condition, but was discharged April 26, for amblyopia caused by wood alcohol poisoning.

The Columbian spirits taken by this man was bought as such by the company barber in a regular barbers' supply house and was intended for use in preparing his face preparations. He and four other soldiers (whose histories are elsewhere given) went into the barber shop and helped themselves to the stuff either through ignorance of its nature or through an uncontrollable desire to "taper off" from their spree, as most of them had been drinking heavily for a day or two previously. None of them took any wood alcohol after February 28; Nos. 1, 2, 3 and 5 only taking one or two drinks (mixing about 60 c.c. of the poison and an equal part of water). No. 4 took about a pint, the five drinking about a quart in all. Beside this, they drank "Florida water" and bay rum of cheap grades, which doubtless contained methyl alcohol in large proportions.

All of these men were what is known as "booze-hoisters," and Nos. 1, 2, 3 and 5 had been drinking for several days before they took the wood alcohol, and had been on the sick report a number of times for acute alcoholism, yet they strenuously denied, all but No. 4, that they had taken any of the poison, and it was only found out positively at the court martial which followed. Only the Columbian spirits was tested; this was found to be nearly pure methyl alcohol; but the other preparations, being of inferior grade, it is supposed that the alcohol used in their manufacture was impure wood alcohol.

CASE 78.—(From Dr. Frank C. Todd, Minneapolis, Minn.)

H. T. J., aged 45, consulted Dr. Todd on the morning of Sept. 28, 1900. Occupation, painter for 33 years. Referred by Dr. L. B. Wilson. Patient denies syphilis; does not drink more than one glass of liquor in six months. Eyes and sight were normal on Monday, though the patient had suffered from a very bad cold in the head for two weeks. Has worked with wood alcohol frequently, but vision has never been affected, although he has many times been dizzy, and last summer had trouble in accurately determining colors when mixing paint, due probably to the absorption of evaporating alcohol or turpentine while working. Saturday being a rainy day, he did some varnishing with shellac in a small room, and inhaled the alcohol evaporating from the shellac; on Sunday this same work was continued. Patient had purchased what he supposed was pure alcohol, but which proved to be, on investigation, Columbian spirits. This was used in mixing his shellac. Not feeling well, he mixed some of the Columbian spirits with water and sugar, from which he sipped, drinking altogether a glassful or more (only a small portion of this glassful of water, sugar and alcohol was alcohol.) Tuesday, on awakening, he first noticed dimness of vision, and although it was morning he thought daylight had not yet come. He now could read signs, but not ordinary print. Sight was worse Tuesday night, and on Wednesday he could not see the firelight. He then consulted Dr. Wilson, who prescribed strychnin and referred him in consultation to Dr. Todd.

Examination Friday morning showed total blindness in both eyes; careful examination in dark room proved that he had no perception of light. Pupils, medium dilatation, no response. The following treatment was advised and carried out by Dr. Wilson: Catharsis, diaphoresis by the administration of pilocarpin, hypodermic injections of strychnin in increasing doses. After nine days of treatment patient first saw daylight; then his vision rapidly improved. Dr. Todd did not see him again until Nov. 5, 1900, when his sight, with glasses, became normal in every way.

CASE 79.—(From Dr. S. W. S. Toms, Nyack-on-Hudson, N. Y.)

A. B., servant, aged 45, addicted to alcoholism, in March, 1903, deliberately drank, during the absence of her mistress, nearly half a pint of wood alcohol from a bottle so labeled. Early the next morning Dr. Toms was called to see her, on account of what seemed a transitory blindness. This soon deepened, however, and was followed by excitation, which later lapsed into coma, pulmonary edema and death. As the pupils became widely dilated an ophthalmoscopic examination was comparatively easy, but nothing abnormal was noticed in the fundus.

CASE 80.—(From Dr. J. F. Van Kirk, Whatcom, Wash.)

On Feb. 24, 1902, T. P. presented himself at Dr. Van Kirk's office with the following history: He was 38 years of age, a laborer, of not very good habits, but no history of syphilis. Had always enjoyed good health and exceptionally good vision. On Oct. 4, 1901, while employed as a watchman in a warehouse at St. Michaels, Alaska, he discovered a barrel labeled "Wood Alcohol." On this date, Oct. 4, 1901, he drank about one-half ounce, as he said, to "cure a cold." On Oct. 6, 1901, at 9 a. m., he drank about three-fourths ounce more, and again took a third drink of three-fourths ounce on the afternoon of the same day; in all, 2½ ounces in two days. On the night of October 6 he had occasion to rise, when it was discovered that he could not see a ray of light from the lighted candle in the room. At daybreak his vision had so returned that he was able to walk one-half mile to breakfast. He went about his work until noon, when he felt an oppression in the region of his stomach which prevented him from eating dinner. He continued at work for an hour after dinner, when objects began to look cloudy. This obscuration of his vision increased rapidly until 4 p. m., when he was obliged to stop work, and at 9 p. m. he again became totally blind, being unable to see light from a candle burning in the room. He remained blind from this date, October 7, until October 15, when he began to see a faint ray of light. On Oct. 18, 1901, he took the steamer for Seattle, Wash., where he arrived on October 30. During the voyage his vision so improved that he could walk around unaided. He began to work on the railroad section, but found his vision again slowly failing, more rapidly in the left eye. On Feb. 24, 1902, he came to Dr. Van Kirk for treatment. On examination he found R. E., V. = 20/30; L. E. V. = fingers at 5 feet. Entire lower field in each eye was obscured, with a small central scotoma in both. Color sense uncertain; eyes not tender nor sensitive to light. Right pupil somewhat contracted (or left dilated); both pupils reacted feebly to light, both directly and consensually. Media clear, fundus nearly normal, showing only a suspicious pallor, with arteries somewhat contracted. The discs were clearly atrophic and exhibited an ashy paleness. The treatment consisted of 1/30 gr. doses of strychnia sulph., which was later changed to increasing doses of potassium iodid, without appreciable change in the condition. This case was characterized by frequent transient changes. The vision would be markedly improved for a few hours, and then it would suddenly fail. Often the morning vision would be good, while exercise seemed to increase the amblyopia. The patient continued under Dr. Van Kirk's care until May, 1902, when, at Dr. Van Kirk's suggestion, he secured work on an ocean fishing boat. The marked improvement noticed while on his previous sea voyage was less noticeable now, but some transient benefit was apparent. The last report from him was dated late in the summer of 1902. Vision in the left eye was light perception only. Vision in the right eye was quite useful. The patient was unsteady, and apparently much worse when on land. At this time Dr. Van Kirk lost track of the patient, and has not heard from him since.

(To be continued.)

Clinical Report.

A CASE OF TRAUMATIC ANEURISM.

C. M. TINSMAN, M.D.
ADIN, CAL.

Patient.—Saloonkeeper, aged 45, American, in good health. Aneurism involves all the arteries on the right side of the neck. (Fig. 1.)

History.—At the age of 12, while trimming a tree, it rolled over, one of the limbs striking him under the chin, just in front of the angle of the jaw, cutting a gash from one bone to the other, the scar of which still remains. Three hours after the accident the tongue was swollen to such an extent that he was unable to speak or take nourishment. Four days after the accident the aneurism was as large as to-day and very painful. The swelling of the tongue subsided on appearance of the aneurism. Two weeks after the accident he resumed his work as a farm hand, although suffering continually. About four years later

he was thrown from a horse. This caused what he terms a "forked pain"—that is, pain in front and behind the ear. This pain was so severe and continuous for two months that he contemplated suicide. On the appearance of the jugular vein on the surface of the aneurism (as seen in the photograph) this pain ceased (Fig. 2), and he has only suffered an occasional twinge of pain since. He experiences difficult breathing when in a stooped position, working at hard manual labor, at something above his head, or on getting angry. For the last ten years he has been running a saloon and drinking more or less whisky, and can see no change in it for the last fifteen years except the slight enlargement of vessels along the left clavicle, which may be seen in the photograph. On palpating the aneurism, I find the walls hard, as if calcified, in about one-fourth of the external surface of the sac. This hardened area is in a triangular form, from 1½ inches below the ear to within 1¾ inches of the median line of the neck just above the clavicle, therefore covering about one-fourth of the external surface.

I submit to you this brief description of the case, with the photographs, and would like to have an opinion through THE JOURNAL as to how and why such an injury would produce so large an aneurism in so short a time, and why it does not cause more disturbance than the mere difficulty in breathing only when angry, stooping over, lifting heavy weights, or working with the hands extended above the head?

Figure 1.

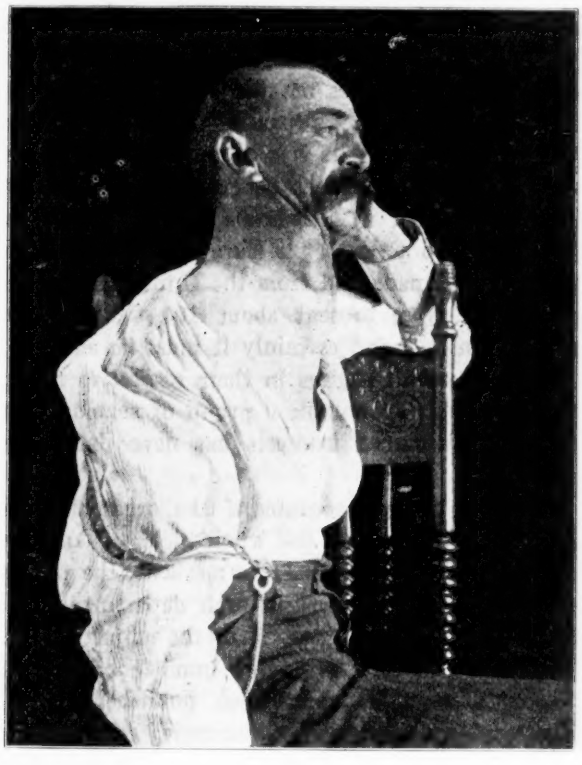

Figure 2.

[The mass in question has the appearance of a vascular structure. Its history of rapid development after receipt of an injury leaves little doubt that such is the case. We hesitate to classify it as a true aneurism because of its too rapid development and subsequent failure to enlarge, and because we lack definite knowledge of its physical signs. It is important to know whether it shows uniform, forcible, expansile pulsation, systolic in time, and whether pressure low down on the carotid alters its size or behavior. We offer the following hypothesis as a possible explanation for many of the features described: Suppose the original trauma to have lacerated an artery of the region now marked by the scar, such, for example, as the lingual where it lies between the geniohyoid and the genioglossus muscles. Blood pouring into the confined spaces between the muscles would then cause swelling of the tongue. Now suppose that the blood followed the courses of the vessels and fascias of the neck to their junction with the sheath of the great cervical vessels, and that here, the tissues being loose and yielding, a rapid ballooning occurred, with relief of pressure in the tongue and appearance of tumor of the neck. The time necessary for such a process tallies well with the facts in the history. Such a condition could persist for years. The walls of the new-formed space would become covered with lymph, organization of which would result in the formation of a sac, constituting so-called false aneurism. Great thickening of the sac wall, with ultimate calcareous deposition, is not unusual in these structures. They progress in size but slowly after their original development, and the tension of the blood within them being slight, pain and pressure symptoms are less prominent than in true aneurism. The second injury probably so shifted the sac that it caused pressure or traction on a nerve, possibly the facial, and at the same time altered its relation to the jugular vein. Rupture of the sac into the vein would now explain the sudden prominence of that vessel from overfilling, and, with lowering of the pressure in the sac, we could assume relief of the pressure on the nerve. This constitutes varicose aneurism. Somewhat similar cases are reported by Roux, in which the rupture into the vein was delayed for four years, and by Rokitansky, in which it was delayed for thirty years. They pulsate feebly, present interesting auscultatory signs, show little tendency to grow or cause pain. Pain might be caused, however, by any act capable of raising the pressure of the contained blood. More light might be thrown on the case by careful inquiry into the events which occurred immediately after the injury, such as the extent of external bleeding and the treatment of the wound, and, above all, by a thorough examination of the mass itself.—EDITOR.]

Medical Organization.—Dr. Leartus Connor says: "A real organization of the medical profession must be far more than meetings for the discussion of medical science, as its individual members are far more than mere intellectual machines. As much as possible it must keep in active co-operation all the faculties we have in common under sociological laws."

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SATURDAY, OCTOBER 8, 1904.

THE INTERNATIONAL CONGRESS OF ARTS AND SCIENCE.

At an early stage in the preparations for the World's Fair in St. Louis, it was decided to hold an "International Congress of Arts and Science." The special purpose of this congress was to emphasize the relationships between the various branches of knowledge, and thus to encourage harmony and unification in the intellectual world. The authorities of the fair set aside a large sum of money for the expenses of the congress, including the publication of its transactions. And so it came about that during the week between September 19 and 25 there gathered in St. Louis men of science and scholars from practically all European countries, from Japan, from Canada and from the United States. Altogether there were present about 100 delegates from foreign countries, and certainly it must be emphasized that these were all leaders in their respective fields of work. Probably so notable a group of scholars representing so diversified interests has never before been assembled.

According to the program of the organizing committee of the congress, the whole field of knowledge had been so subdivided that the methods, the progress, the relations and problems of each department and its various special branches were made the subject of special addresses. Probably the total number of addresses delivered exceeds 250, and when published these addresses will constitute an authoritative review of contemporary science and scholarship. Naturally, the audiences that assembled to listen to the various addresses varied very much in size and composition; it has been estimated that the audiences averaged about a hundred. In some of the medical sections there was probably a much larger attendance, and, again, in a few the audience numbered scarcely a dozen. While the total attendance fell far short of the anticipatory calculations of the committee, the feeling seemed to prevail in St. Louis, and has been reflected from other points since the meeting, that the congress was a distinct success in spite of the many distractions and disadvantages connected with the holding of an elaborate series of meetings of this kind within the grounds, amid the bustle and confusion, of a universal exposition. The exposition made the congress possible, however, and the congress certainly lends a feature of unique distinction to the exposition. Of course, the full influence of the congress depends to the largest extent on the publication of the addresses.

In this congress medicine was treated as a department of the utilitarian sciences, and divided into twelve sections,[1] which included the more important clinical specialties, pathology, public health and preventive medicine. Bacteriology, anatomy and physiology were placed in the department of biology. Of course, this arrangement was criticized. Why should not pathology be treated as a pure biologic science? Why two sections for public health and preventive medicine. Like all efforts at classification, even this did not escape shortcomings of this palpable sort; let it be remembered that its chief purpose was to secure the greatest possible degree of order and sequence in the proceedings, and that it does not permanently fix the position of any branch of science. Far from it. The addresses in the medical and biologic sections will make interesting reading for the serious student of medical science, as well as for the non-medical scientist and the scholar in general.

Some of the addresses contain important contributions to science, especially the theoretic side, but the larger number dealt with the general relations and problems of the special branches. Disclaiming all tendency to Chauvinism, it must be said that the American medical speakers acquitted themselves very creditably indeed, which is no small compliment when it is recalled that the foreign delegates numbered among others J. Clifford Allbutt, Wilhelm Waldeyer, Johannes Orth, Sir Felix Semon, Theodore Escherich, Max Verworn.

If we, in conclusion, ask ourselves the question, How and in what way does this congress contribute to medical progress? then the simplest, most direct answer must be, first, by showing, from a study of the progress as well as of the problems of medicine, the enormous extent to which progress in medicine is dependent on progress in other sciences, especially, of course, in the natural sciences; second, by emphasizing that the exponents of the practical, clinical branches are dealing by means of the same methods with the same problems in different fields of medicine. Surely these lessons in the real unity of knowledge can not but broaden the scientific basis of medicine and thus favor its progress.

THE LONG LIFE OF GERMS IN CLEAN WATER.

It is almost universally acknowledged that water is a carrier of infection, and that the micro-organisms of disease may be contained in what is apparently pure, uncontaminated spring water. It is, however, not generally known that those organisms may live for long periods in such water and retain their full virulence. Indeed, the opinion generally held and borne out by the literature on this subject is that pathogenic bacteria, though they may live for a time in clean water,

1. Reported briefly on page 1077 of this issue.

can multiply little if at all, and tend to die out rapidly. To this fact is attributed the frequent failures encountered by bacteriologists who have attempted to isolate such bacteria from drinking water. The short life of pathogenic bacteria in water is supposed to be due to the unfavorable environment, to the action of sunlight, extremes of temperature, currents in the water, but above all to the competition of the hardier water bacteria and the absence of proper nutriment. Thus Bolton states that the typhoid bacillus requires at least 67 mg. of nitrogenous matter to the liter of water, the cholera vibrio at least 400 mg. He found that the typhoid bacillus lived only seven days in ordinary tap water. Karlinsky found that the anthrax bacillus and the cholera vibrio sown in water died in seventy-two hours or less, and Kraus, who obtained similar results, states that in this respect there is no difference between pure spring water and very foul well water; under all circumstances water is an "antipathetic medium." These conclusions have been verified many times by other investigators, some of whom lay most stress on the lack of nutriment as a cause of the rapid death of pathogenic bacteria in water, others on the presence of the water bacteria which multiply at the expense of the less hardy pathogenic bacteria. Konradi[1] challenges these statements, and as a result of his experiments asserts that water is an excellent medium for many pathogenic micro-organisms and that, in the long run, it is they which survive and the water bacteria which succumb. He proceeds from the statement made by Mez,[2] namely, that these organisms live longer in pure than in dirty water, and that, therefore, pure drinking water, once infected, is more dangerous than is foul water.

The bacteria chosen by Konradi for experimentation were the anthrax bacillus and its spores, the *Staphylococcus pyogenes aureus* and the typhoid bacillus. In all these experiments it was found that ordinary bacteria present in the tap water multiplied greatly for a time, but then began to die out, and that, after varying periods, the water kept at room temperature was found to contain a pure culture of the pathogenic organism which, up to complete evaporation, retained its full virulence. Thus the anthrax bacillus and its spores lived for periods varying from 264 to 816 days, having completely conquered the water bacteria after three or four weeks. The staphylococcus aureus was found in pure culture after two months, and lived and retained its virulence for 508 days.

The competition of the water bacteria was greater in the case of the typhoid bacillus; only after more than four months was the latter found in pure culture. It lived in ordinary tap water at room temperature for 199 days. Sterilized water was also found to be a good culture medium for the anthrax bacillus and for the typhoid bacillus, but the staphylococcus aureus died in a short time in such water.

These results are not only of scientific interest, but of great practical significance. We are accustomed to regard the danger of infection from contaminated water as comparatively short lived, provided the source of contamination be removed. A city which has suffered from an epidemic of typhoid fever, due to infection of the water supply, and which has instituted measures to do away with the source of infection, will consider itself free from danger the following summer, yet, according to the researches of Konradi, typhoid bacilli, living and virulent, may persist for over a year in clean water and proceed to multiply under favorable conditions. This may be one explanation for the recurrence of epidemics of typhoid fever after supposedly rigid sanitary reform of water supply, recurrences which are so discouraging and apparently inexplicable.

1. Centralblatt für Bakteriologie, May 28, 1904, vol. xxxvi, No. 2, p. 203.
2. Mez: Mikroskopische Wasser-Analyse, 1898.

THE SANITARY PROBLEM IN PANAMA

One of the first fruits of national medical organization has been an awakened interest and sense of responsibility on the part of the medical profession concerning all matters of national sanitation and hygiene. The reports in the public press of friction between the governor of the canal strip and the chief of sanitation have, therefore, attracted much attention, and THE JOURNAL has accordingly obtained from an authoritative source the facts in the case.

While everything at Panama is not the color of roses, there has been no personal friction whatever between Colonel Gorgas and the administrative chiefs, and the former's sanitary scheme has been adopted by the commission in all its essential features, although with some pruning down of personnel and expenditures. This scheme in general terms contemplates an effective quarantine at Colon and Panama to keep out infectious diseases, including yellow fever, which exist on both coasts, and plague, which is present on the west coast. Also a system of hospitals is being organized for the isolation and treatment of such cases of infectious diseases as appear not only among the canal employes, but also in the civil population of the canal zone. Thirdly, health officers are appointed to carry out all works of sanitary precaution such as the destruction of mosquitoes, disposal of excreta and wastes, and to insure the observance of sanitary regulations in the terminal cities and the villages included in the zone. The Panama government, at whose head fortunately is a physician, has co-operated cordially in this plan of issuing the necessary decrees and by appointing as its quarantine and health officers the assistants of Dr. Gorgas which he has selected for these responsible positions. The quarantine system is already in effective operation in the experienced hands of two officers of the United States Public Health and Marine-Hospital Service. The cleaning up of Colon and Panama is making good progress under health offi-

cers trained in tropical sanitation by service in the Army. The command of the mosquito brigades along the canal and the sanitary control of the fifteen or more villages distributed along it have been given to one of Colonel Gorgas' most valued assistants in his brilliant work in Havana. About 400 men are now being employed in sanitary work, exclusive of sewers and water supply.

The hospital system as authorized includes the old French hospital on the Hill of Ancon, overlooking Panama, and which has at present about 150 patients, a new hospital for 100 beds now being constructed at Colon, and a number of dispensaries along the line of the canal.

The crux of the sanitary question is involved in the purpose of these dispensaries which requires some explanation. The two diseases which were chiefly instrumental in bringing ruin on the French company were yellow fever and malaria, both infectious fevers spread by the agency of mosquitoes. There is, however, this important practical difference between them, that the yellow fever patient can not spread the disease after the third day of his illness, whereas the infection of malaria persists for months and can be disseminated by persons who are not apparently ill and are engaged in their ordinary pursuits. In fact, in the canal strip it has been found that the population, which is mainly black, and enjoys the well-known tolerance to this disease which is characteristic of the negro race, is universally infected with malaria. This population, exclusive of the terminal cities, numbers about 10,000. The vastness and complexity of the problem of bringing under control this infection which is there so universal, so deadly to the white race and so injurious to the physical energy of all races, becomes apparent. In comparison with it the yellow-fever problem is simple and can probably be readily handled by the present organization along the lines already so successful in Cuba. The antimalarial campaign outlined by Colonel Gorgas is startling alike in its simplicity and its boldness. He proposes first an unremitting war on the anopheles by means of mosquito brigades, drainage, etc., and second, antimalarial treatment of the entire infected population. For this purpose he asked for twenty dispensaries and twenty physicians, but the commission, deterred probably by reasons of economy and a failure to realize the vital importance of the measure, has so far authorized six dispensaries and three physicians.

This unwillingness on the part of the commission to embark in so large an undertaking, new of its kind and based on a fact of etiology which they perhaps view with skepticism, is not surprising. In view of the fact that the commission contains no medical member this situation was expected, and was predicted by the representatives of the American Medical Association who interviewed the President with a view to obtaining the appointment of a medical commissioner. This defect is a radical one which will necessarily continue to gravely handicap the administration of sanitary affairs. The problems before the commission are of three kinds—engineering, sanitary and administrative. The failure of the French company was not in engineering, but in the last two. Yet the Americans entrust the work to a commission composed of four engineers, three administrators and no sanitarian. These in their organization naturally repeat this disregard of the relative importance of sanitation. The chief engineer is given a salary of $25,000, the administrative chief on the ground is a commissioner with a salary of $12,000, while the chief of sanitation is a subordinate of both and lags far in the rear with a salary of $7,500. The chief of sanitation has been likewise subjected to a sanitary board composed of his own subordinates. This arrangement, as long as the members of the board are harmonious, is only futile and productive of delays, but if disagreements occur, it will paralyze all vigor of administration. It would seem that the public interest as well as the dignity of the medical profession require that Dr. Gorgas be given a higher status, a freer hand and more authority until the occurrence of a vacancy in the commission will permit his appointment thereto.

BACILLUS DYSENTERIÆ IN THE SUMMER DIARRHEAS OF INFANTS.

In searching in the intestinal contents or dejecta for bacteria which might be the cause of an infectious disease, investigators have often mistaken the organism present in largest number for the one sought, and have overlooked the specific one which was present in much smaller number. This had been the case in the study of dysentery until Shiga, in 1898, made use of the agglutinating property of the blood of the infected person on the specific organism, to separate it from the other intestinal bacteria. The work of subsequent investigators in various parts of the world seems to have determined that typical dysentery, aside from the amebic form, is always due to the bacilli which are closely related to the one originally described by Shiga. Some of these bacilli have been shown to cause typical dysenteric lesions in experimental animals.

These fruitful investigations in connection with dysentery led to the conduct of studies in similar lines on the intestinal diseases of infants by Duval and Bassett during the summer of 1902. Plate cultures were prepared from the stools of 53 infants suffering from summer diarrheas of various degrees of severity, and from 42, organisms were isolated which corresponded culturally to those previously cultivated from cases of dysentery in adults. These cultures were agglutinated by the blood serum of the patients from whom they were obtained, by the serum of adult patients with acute dysentery, and by anti-dysenteric serum from horses. The specific bacillus was not found in the stools of 25 healthy children. The cases from which dysentery bacilli were

isolated included examples of dyspeptic diarrhea, of enterocolitis, and of malnutrition and marasmus with superimposed infection. Duval and Bassett concluded that their findings justified them in the conclusion that the summer diarrheas of infants are caused by intestinal infection with *Bacillus dysenteriæ* (Shiga), and therefore are etiologically identical with the acute bacillary dysentery of adults.

During the summer of 1903, the Rockefeller Institute for Medical Research, under the direction of Dr. Simon Flexner, undertook the further bacteriologic investigation of children affected with various forms of diarrhea. The investigation was carried out directly by some twelve bacteriologists in the cities of New York, Philadelphia, Boston and Baltimore. The results of this collective study are presented, together with a clinical study of cases, in the second volume of the studies from the institute which has just appeared.[1]

In general the results of the collective study agree with the earlier ones of Duval and Bassett. Four hundred and twelve cases of diarrheal disease among children were studied with reference to the bacillus of dysentery. Of these 279, or 63.2 per cent., yielded positive results. The cases were mostly unselected, and represented all varieties and degrees of summer diarrhea. The bacteria, cultivated and recognized as dysentery bacilli, represent several varieties or forms which have been included within a group of dysentery bacilli, because of similarities in cultural peculiarities and in the way they are affected by immune sera. It is of interest to note that Duval was able to cultivate the Flexner-Harris bacillus from the stools of two infants who were in perfect health.

In speaking of the results of treatment with antidysenteric serum, Holt says that on the whole they were disappointing, but that no unfavorable symptoms followed its use in any case. Out of 83 cases treated with the serum, 38 were fatal, but many were desperate cases. He believes that the profound disturbances of digestion and impaired nutrition would usually prevent any such pronounced effects as follow the injection of diphtheria antitoxin. Acute attacks in which the child's resistance is still good are most favorable.

In the same volume Ford reports the results of a study of intestinal bacteria from 50 autopsies. In 10 cases he found the *Bacillus pseudodysentericus*, which corresponds to the *Bacillus dysenteriæ* in cultural reactions, but fails to be agglutinated by the serum from cases of dysentery. The frequent presence of such bacilli in the intestine and the occasional presence of dysentery bacilli in normal stools are most important and emphasize the great caution required in drawing conclusions.

Recent investigations have revealed the fact that not only the bacterium causing an infection may be agglutinated by the serum of the infected animal, but that other and quite different bacteria may be almost as readily and powerfully agglutinated by the same serum. This must make us very careful in accepting the agglutination of an organism by a serum as sufficient proof of infection by the organism.

Altogether these studies have added much to our knowledge of this particular group of intestinal bacteria, but much additional, carefully controlled work is required before it can be generally accepted that the dysentery bacillus is the cause of most cases of summer diarrhea in infants.

1. Studies from the Rockefeller Institute for Medical Research, vol. ii, 1904. See report in New York News, this issue of THE JOURNAL.

MUNICIPAL CONTRACT PRACTICE.

Under the head of "The Socialization of Medicine" a French contemporary[1] discusses a recent decision which, it states, has been adopted by the Federal council of the city of Zurich. This is in effect to levy a medical tax of 4 francs and 35 centimes per head of the population. With the sum thus raised forty physicians are to be selected by the municipality to give free treatment to the citizens. Each physician is to have a salary of $2,500 per annum as compensation for his work, and presumably, is to receive no further compensation. It may be that forty physicians are a sufficient number for the city of Zurich, but the beauty of the system is not altogether demonstrated by this fact. Our contemporary points out a few of the objections, such as the probability that the more unpopular of the appointees will have a comparatively easy time in earning their salaries while the more popular ones will be worked like dogs. Like every other socialistic plan, moreover, it involves a general leveling down, which will be unprofitable in the end for both the profession and its patrons. The authority of the physician would also suffer in his capacity as a paid public servant subject to every one's call and whim, and it will be fortunate if there is not serious degradation of professional standing and spirit under such conditions. There is apparently no arrangement made for specialists and some developments are to be expected on this account. Will the experiment work satisfactorily even in Switzerland?

1. Journal de Médecine de Paris, August 28.

SEX DETERMINATION.

There is nothing new in the fact that the determination of sex in some of the lower forms of animal life can be brought about by certain modifications of nutrition. It was discovered by the bee savants many years ago, and they and their relatives and descendants have made practical application of the discovery ever since. There would be nothing extraordinary or excessively startling if we should find out that we could experimentally produce similar results in other forms of animal life not more highly organized than the bees. The statement alleged to be made by the distinguished California biologist, Professor Loeb, that "science is now able to control the sexes, saying whether or not the newly generated body shall be male or female," can hardly refer alone to such matters of ancient history

as the determination of sex in the lower organisms. The natural assumption is that his statement covered all forms of animal life. There is a vast difference between the hymenopterous insect and the higher mammals, and what may be possible with a simpler organism may be impossible with a higher and more complicated machine. If Professor Loeb's discovery is genuine, its practical importance as applied to mankind is tremendous. How it would simplify certain problems in political economy and what a boon it would be to advanced socialists if we could simplify the complicated mechanism of human society by removing the embarrassing problems connected with the proportion of the sexes and create such a harmonious state of affairs as exists in the communities of the bees and ants. It is a question, however, whether many of our reformers of the present day would like to be put in the class of neutral workers, and yet that is one of the many possibilities that may be imagined should Professor Loeb's alleged discovery be verified. In the meantime, however, it seems to us that a little judicious skepticism is the appropriate thing; the fate of Professor Schenk is still an unpleasant memory.

THE POSTOFFICE DEPARTMENT SUPPRESSES ANOTHER FRAUD.

The postoffice department has issued a fraud order against the Thomas A. Edison, Jr., Chemical Company, of New York, declaring the operations of this company to be fraudulent attempts to make money from the gullible public through the influence of the famous name of Edison. We have previously referred to the so-called magno-electric vitalizer, which this company puts out. It seems that two attempts were made to patent this device, which is said to consist of two plates of copper with interposed acidulated blotting paper, and the patent office refused both applications, pronouncing the apparatus inoperable and therefore not patentable. The advertisements of the company have proclaimed the marvelous invention of the young Edison, and detailed at length the remarkable effects on disease said to be secured by the use of this instrument. The senior Edison declares that his son has never shown any ability as an inventor or an electrical expert, and that the chemical company has simply given him a salary for the use of his name. The company has issued a paper called *The Magnet*, said to be edited by Thomas A. Edison, Jr. In one issue an editorial headed "Father and Son" dilates on the wonderful ability of both the Edisons and the fame which will be attached to their names in future histories. The famous inventor comes tardily, it seems to us, to the rescue of his reputation. It has been charged that he was not wholly disinterested in his son's enterprise. We trust that there is no truth in such a statement. We prefer to believe that his endorsement of the appropriate action taken by the postoffice department has been preceded by serious attempts to correct his wayward son and to restrain the company from linking his name with this notorious fraud. Incidentally, it is of interest to remark that this postoffice regulation ought to be an effective bar to such concerns as the one under discussion. The postoffice seems to be ready to do its part; it is left for the public and the profession to bring to the notice of the authorities the many frauds which are fattening on the public through the medium of the mails.

PROGRESS AND POVERTY.

The Chicago newspapers have been deriving some amusement by commenting on the fact that a physician pleaded the good health of the city as a sufficient excuse for not meeting a financial obligation. The subject lends itself readily to the humorist, but, after all, the situation is full of pathos. Since the first of this year, as shown by statistics as well as by the personal observations of physicians in general practice, Chicago has been remarkably healthy. There have been no epidemics among children and adults, save that pneumonia for a time last winter nearly approached the proportions of an epidemic. Preventive medicine has greatly improved the general healthfulness, and the medical profession rejoices at the measure of success that has followed the earnest efforts made to banish communicable diseases. The individual physician who has seen his income dwindle during a healthy year gets no reward, either substantial or honorary, for his small share of the credit earned by the profession as a whole for its beneficent and self-effacing effort. For in Chicago, and in other larger cities, and, for that matter, in smaller towns and villages, many physicians are in dire distress for a living for their families and themselves. Pride makes them hide their plight, and their suffering is not easily imagined. To these the levity of the journalist is bitter irony. Steadily we see ourselves contributing to the health and longevity of the community, and steadily we see our numbers increase. The total sum paid by the community for the care of the sick year by year grows less, and this lessened amount is divided among a number steadily increasing by the annual output of our medical colleges. The process, however tragic for the individual physician, will continue, must continue; for certainly there must not be any let up in preventive medicine; and it would be too utopian and idealistic to expect any of our medical colleges to go out of business, or to stop urging young men and women to enter on the study of medicine.

REPORT OF THE MARYLAND TUBERCULOSIS COMMISSION.

The report of the Tuberculosis Commission of the State of Maryland has just been received. The commission found that the death rate from tuberculosis in Maryland is somewhat greater than for the United States in general and ascribe this in part to the large colored population of the state and the predisposition of the negro to tuberculosis. The report states that the death rate from tuberculosis in Baltimore exceeds that of the state at large and that in comparing Baltimore with the leading cities of the world, it was found that the death rate from this cause has shown a slight rise in the last five years and at the end of 1902 had risen above all other cities except New York. The statistics compiled by the commission show that tuberculosis of

the respiratory organs is the most prevalent form of the disease and that tuberculosis among infants in Maryland forms a much greater factor in the tubercular mortality than is generally supposed. This is particularly the case among colored infants in whom the mortality under two years exceeds the general colored tubercular death rate to a considerable degree. General and meningeal tuberculosis are the most prominent factors in the infant tubercular mortality. In summing up the economic effects of tuberculosis the life history of a consumptive has been divided into three periods: 1. A period of unimpaired earning capacity preceding the onset of the disease and extending into its earliest stages. 2. A period in which the patient is capable of irregular work at reduced wages. 3. A period during which there is an entire loss of earning capacity, with or without a condition of dependency. In this period the patient and his family become, in a considerable proportion of cases, a source of direct loss to the community. The report goes on to state that indirectly the death from tuberculosis of the main supporter of the family entails the removal of children from school before the proper time and starting them out in life with an education so imperfect as to permanently impair their earning capacity. This, of course, tends to lower the general educational standard of the community. The commission considers general prophylactic measures in force in Maryland and elsewhere throughout the country and states that tuberculosis is in many instances a curable disease. The method of treatment outlined in the report includes general hygiene, food and fresh air. Sanatorium treatment is advocated because it insures the proper medical supervision of the patient and a freedom from care and temptation to work, which can rarely be obtained in the home. The establishment of special dispensaries for tuberculosis in the out-patient departments of hospitals is also advised and it is urged that a state sanatorium for the care and treatment of consumptives is greatly to be desired, as even from a purely material standpoint it would prove to be an economic measure. The report concludes with a very full and interesting account of the Tuberculosis Exposition held last January at Baltimore.

Medical News.

CALIFORNIA.

Sanatorium Enlarged.—The Pottenger Sanatorium for Diseases of Lungs and Throat, Monrovia, is being enlarged. The new addition will be ready to receive patients Jan. 1, 1905.

New Hospitals.—The new Redlands Hospital will be completed and turned over to the stockholders early this month. ——The St. Frances Hospital Company, San Francisco, have secured a permit and will build a four-story hospital to cost $50,000, on Julian avenue, between Fourteenth and Fifteenth streets.

Medical Sir Knights Banqueted.—Dr. Curtis G. Kenyon, chief of staff of the medical department of the twenty-ninth triennial conclave of Knights Templar at San Francisco, gave a banquet to those who assisted him, September 18, at the Hotel Pleasanton.——Dr. A. Miles Taylor entertained at dinner at the San Francisco Club, the medical Knights Templar who rendered service during the conclave. Dr. Curtis G. Kenyon, the guest of honor, was presented with a silver tantalus, and Dr. A. Miles Taylor with a cut-glass decanter and set of glasses.

Expert Witness Deserves Expert Fee.—Dr. William A. Whitlock, Merced, was victorious in a contest with the district attorney, September 30. He was a witness in a suit on trial, and was asked to give expert testimony, but declined to do so until a fee of $50 had been guaranteed by the district attorney. The circuit judge ordered Dr. Whitlock to testify; he refused, and was committed to jail for contempt of court. After an imprisonment of three hours, the attorney came to the jail, agreed to guarantee the payment of the fee, and Dr. Whitlock went back to court and testified.

DISTRICT OF COLUMBIA.

Much Typhoid.—For the week ended September 24, typhoid fever cases in Washington increased from 278 to 291; 52 new cases were reported, and 39 patients were discharged.

Mortality.—The report of the District of Columbia Health Department for the week ended September 24, shows a total mortality of 104; 55 white and 49 colored. Diarrheal diseases caused 15 deaths; consumption, 14; typhoid fever, 9; apoplexy and heart disease, each 8; kidney diseases, 7, and violence, 5.

Contract Treatment of District Patients.—Dr. William A. Warfield, surgeon-in-chief of Freedmen's Hospital, Washington, in his annual report recommends "that the whole maintenance of Freedmen's Hospital be borne by the United States, and that the district commissioners be authorized to enter into a contract with the Secretary of the Interior for the care, at such rate per capita as may be determined on, of all persons from the District admitted to the hospital for treatment."

ILLINOIS.

Waukegan Hospital Open.—The Jane McAlister Hospital, Waukegan, is now completed and entirely fitted out, and was ready to receive patients October 1.

Memorial Operating Room.—In memory of his son, Louis F. Swift will equip the operating room of the hospital at the Methodist Episcopal Orphanage at Lake Bluff.

The Belleville Epidemic.—At a mass meeting held in Belleville, September 28, a committee was appointed to secure a site for an isolation hospital. At present about 90 cases have been reported to the health authorities.

Condemns Camps.—Dr. Martin W. Cushing, Joliet, has found camps on the drainage canal extension south of Lockport insanitary, and has ordered the buildings put in good condition, and a better quality of food furnished the workmen.

Moves to Chicago.—Dr. Mary M. Mars, Evanston, who resigned in July from the medical staff of the Cook County Hospital for the Insane, Dunning, has moved to Chicago. Her former associates at Dunning a few days ago, presented her with a valuable electrical machine.

Chicago.

Bequest.—By the will of the late Mrs. Elizabeth Kelly, the Chicago Baptist Hospital receives a legacy of $2,000.

Dermatologists Return.—Drs. Joseph Zeisler and James Nevins Hyde, who have been in attendance on the International Dermatological Congress in Berlin, have returned.

College News.—The College of Physicians and Surgeons held its opening exercises, September 27. Dr. Charles C. O'Byrne, made the address.——Illinois Medical College graduated a class of 14, September 29. Judge Holdom delivered the doctorate address.

The Week's Mortality.—During the week ended October 1, 477 deaths were reported, equivalent to an annual death rate of 12.61 per 1,000. There were 20 more deaths than in the previous week and 10 more than in the corresponding week of 1903. Acute intestinal diseases caused 82 deaths; consumption, 44; violence, 42; pneumonia, 40; heart diseases, 35, and Bright's disease, 29.

Professor Northrup Speaks.—At a special joint meeting of the Chicago Medical Society and Chicago Pediatric Society, September 28, Dr. William P. Northrup, professor of diseases of children in the University and Bellevue Hospital Medical College of New York City, presented an interesting and valuable paper on "The Diagnosis and Treatment of Pneumonia in Infants and Young Children."

The Unvaccinated Suffer.—Three cases of smallpox were sent to the Isolation Hospital during the week. Two of these were unvaccinated children, and the third case was an adult who had an imperfect vaccination mark made in childhood. Two deaths occurred during the week—a colored adult and a 4-year-old white child, neither of whom had been vaccinated. These make seven smallpox deaths in one month, while there were only three deaths out of 147 cases during the previous eight months. The present type of the disease is much more severe than at any time during the last six years.

The Healthiest September.—The Health Department announces that September, 1904, takes its place in the vital statistics of the city as that of the lowest September mortality on record. Its total of 1,935 deaths represents an annual rate of 12.33 per 1,000. The lowest previous rate for the month was that of September, 1903, when the rate was 13.42 per 1,000, or 8 per cent. higher, while the average September rate for the previous decade was 15.40 per thousand, or 19.9 per cent. higher. Compared with the corresponding month of last year there were 41 more deaths from the acute intestinal diseases, but 46 fewer from typhoid fever; deaths from consumption, 223, were exactly the same in each month, while there were four more deaths from pneumonia. Among other important causes of death there were fewer from Bright's disease, 11; bronchitis and cancer, 8 each; diphtheria, 26; nervous diseases, 20; scarlet fever, 3; suicide, 7; measles and whooping cough, 2 each. There were 7 deaths from smallpox this September and only 1 in September last year and 26 more deaths from violence other than suicide.

MARYLAND.

Doctors Pay License.—By a new city license law, a special tax of $10 is levied on every physician in Frederick City, commencing October 1. It is said the physicians will resist its payment, on the ground that the legislature has granted them the privilege of practicing where they please in Maryland, and no municipality has the right to tax them.

Baltimore.

Colleges Open.—The session at the Maryland Medical College was opened with a lecture by Dr. A. D. Maconachie. At the University and Johns Hopkins there were no formal addresses.

September Deaths.—During September there were 810 deaths reported, of which 268, or one-third, were under 5 years. The chief causes of death were: Consumption, cholera infantum, heart disease, Bright's disease, cancer and apoplexy.

Surgical Building to Open.—There will be addresses at the opening exercises of the new surgical building, at Johns Hopkins Hospital, by Drs. T. Clifford Allbutt of Cambridge University, and Lewis A. Stimson of New York City. Dr. James J. Carroll, U. S. A., the only survivor of the Cuba Yellow Fever Commission, will deliver the address at the unveiling of the Lazear tablet.

Dairyman Seeks to Consult Birth Register.—The health commissioner refused permission to a dairyman to examine the register of births and deaths for the purpose of using the information to extend his business. The dairyman has in consequence brought suit to compel the city to yield to his demand, but the city solicitor says that if the suit is decided against the commissioner an ordinance will be passed by the council prohibiting such use.

Personal.—Dr. Elliot C. Prentiss of Washington sailed from this city for Germany, September 28.——Among Maryland doctors recently at the St. Louis Fair are Drs. Frank J. Flannery, E. T. Duke, E. J. Dirickson, S. K. Waters, J. J. McCurdy, Frederick Carruthers, L. W. Morris, J. E. Myers.——The following have arrived from Europe: Drs. Ross G. Harrison, Samuel Amberg, C. B. Farrar, Karl Osterhaus and W. G. Brown.——Nothing has been heard of Dr. Champe S. Bradfute, who disappeared suddenly several months ago.

Distinguished Foreigners in Baltimore.—A number of distinguished foreign physicians were in Baltimore during the week. Dr. Johannes Orth of Berlin, the pathologist and successor to Virchow's chair and to the editorship of *Virchow's Archiv*, was the guest of Dr. Thomas S. Cullen, and was given a dinner by Drs. Cullen and Welch. Dr. Osler had as his guests Drs. T. Clifford Allbutt, regius professor of physics, Cambridge University, and the author of the "System of Medicine," and Major Donald M. M. Ross of Liverpool, who has acquired fame in the mosquito-prophylaxis of malaria. The latter has gone to Panama. Dr. Allbutt remains to take part in the exercises connected with the dedication of the new surgical building at Johns Hopkins Hospital——Dr. Desnos of Necker Hospital, Paris, was entertained by Dr. Hugh H. Young and Dr. Osler.——Dr. Theodore Escherich of Vienna, the authority on diseases of children and advocate of the serum treatment of scarlet fever, was the guest of Dr. J. C. Hemmeter.——Dr. Otto Cohnheim of Heidelberg also stopped here.——Dr. Wilhelm Ostwald of Leipsic was the guest of Dr. Harry C. Jones.

MASSACHUSETTS.

Counterfeiter Insane.—Dr. Frank Sauft, Roxbury, indicted for counterfeiting, has been adjudged insane and committed to an asylum.

Nurses' Training School for Harvard.—In connection with Harvard Medical School, a new nurses' training school is to be established. Dr. Alfred Worcester, now at the head of the Waltham Training School for Nurses, is to have charge, and has spent the past few months in Europe studying the hospitals and nurses' training schools there.

Serum in Smallpox.—The recent epidemic of smallpox in North Adams, of more than 35 cases, is noteworthy from the successful employment of antistreptococcus serum in at least one case, with the apparent result of shortening the disease and decrease in the severity of signs and symptoms. The patient was a young priest who had not been vaccinated since childhood.

MISSOURI.

Poorhouse Appointments.—Drs. C. C. Drace and A. T. Hayman have been appointed assistant physicians at the St. Louis City Poorhouse, vice Drs. R. E. Kearney and J. B. Childs, removed.

Sentenced for Fifty Years.—Dr. Clarence D. Heflin, St. Joseph, was convicted of criminal assault on his office girl, aged 14, and was sentenced to imprisonment for fifty years in the penitentiary.

Kelly in St. Louis.—Dr. Howard Kelly, chairman of the section on gynecology in the Congress of Arts and Sciences at the World's Fair, held a clinic at Mullanphy Hospital, St. Louis, September 27.

The N. S. Davis District Medical Association.—The Northeast Missouri Medical Association has been reorganized and the name changed to the N. S. Davis District Medical Association. This association is composed of Lee, Van Buren, Davis, Appanoose and Wayne counties in Iowa, and Clark, Scotland, Schuyler, Putnam and Mercer counties in Missouri. One of the requirements for membership is that the applicant be a member in good standing of his county society. Dr. F. B. Hiller, Kahoka, Mo., is president, and Dr. E. E. Parrish, Memphis, Mo., is secretary. The next meeting will be held next Tuesday, October 11, at Memphis.

NEW JERSEY.

Hospital Incorporated.—Articles of incorporation of the Essex Private Hospital Association were filed in Newark, September 20. The incorporators named were Drs. Carl W. Lippe, Maurice J. Klein and Theodore Teimer. The capital stock is $6,000.

Diphtheria in Newark.—Diphtheria is widely spread throughout the city, and seems to be rapidly increasing. During the week ended September 3 there were 27 cases reported, and in the following week 53 cases. During the week ended September 17 51 cases were recorded.

Camden's Public Bath.—The total number of bathers at the public bath-houses during the year numbered 41,239. During the year 1903 there were 46,944, a decrease this year of 5,705. There has been a greater attendance of white than colored females, the respective figures being 6,026 and 5,888.

NEW YORK.

Buffalo College Opens.—The Medical Department of the University of Buffalo opened for the session of 1904-1905, September 26. Dr. Thomas McKee delivered the opening address.

Summer Charities Close.—Cradle Beach and the Fresh Air Mission Hospital at Athol Springs have closed for the season. There is a deficit of $3,053.39. An appeal has been made to all interested in this particular charity for contributions.

Increase in Typhoid in Buffalo.—There is the usual increase in the number of typhoid cases, a census of all hospitals showing 50 cases, and there are probably as many cases in private practice. The health commissioner again urges the boiling of all drinking water.

Pollution of Lake Champlain to End.—Owners of country seats along the shores of Lake Champlain have been conducting a vigorous campaign both in this state and in Vermont, against pollution of the water by refuse from pulp mills. At last a process has been invented and successfully put into operation for the evaporation of the waste liquor thrown out. The water is not only freed from all foreign substances, but the

fiber and other materials taken from it have become a valuable product for sizing paper.

New York City.

Personal.—Dr. Hal B. Brownell arrived on the *Kroonland* September 27.——Dr. William S. Ely arrived on the *Potsdam* September 27.

Bellevue Valets Must Go.—The house staff at Bellevue Hospital have lost the day in their battle to retain their male attendants. Chambermaids will hereafter attend to the rooms and clothing of the house staff.

Benefits for Hospitals.—The military band of the Garde Republicaine will give a concert October 16 for the benefit of the French Hospital, now in course of erection.——The Alliance of Mt. Sinai Hospital will hold the first of a series of subscription dances at Hotel Astor.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended September 24, 307 cases of tuberculosis, with 107 deaths; 234 cases of diphtheria, with 28 deaths; 84 cases of typhoid fever, with 19 deaths; 68 cases of scarlet fever, with 1 death; 42 cases of measles, with 3 deaths; 11 cases of varicella, 4 cases of smallpox, and 13 deaths from cerebrospinal meningitis.

Plan to Check Puenmonia.—The special commission which will make a study of pneumonia for the Department of Health and endeavor to formulate measures to curtail the alarming spread of this disease will hold its first session this month in this city. This commission is composed of Drs. William H. Welch, William Osler, Edward G. Janeway, L. Emmett Holt, T. Mitchell Prudden, Theobald Smith, John H. Musser and Frank Billings.

Deaths from Typhoid Increase.—The figures for the first three weeks in September show the total number of cases reported to be 441, with a death rate of about 20 per cent. The highest death rate last year was 13.4 per cent., and the largest number of cases reported, 324, was for the first four weeks in October. To a certain extent the increased number of cases is due to the activity of the Health Department, which is on a never-ending hunt for typhoid.

Asylum Officials Accused.—H. J. Bebro, known as the "Charles Reade of America," was heard in the Supreme Court in behalf of James P. Haughey, who is seeking release from the State Asylum at Matteawan. Mr. Bebro claimed that there are a number of sane persons detained in the asylum and subjected to cruel and inhumane treatment. The court ordered Haughey back to the asylum and appointed Dr. Edward C. Spitzka and Charles L. Dana to examine him.

Medical Colleges Open.—The College of Physicians and Surgeons of Columbia University was opened by a brief address by President Butler, after which Dr. John G. Curtis, acting dean, addressed the students on "Our Medical Training in the Light of Ancient Error." The enrollment of freshmen numbered 87, as against 100 on the opening day of 1903. The opening exercises of the New York University Medical College were presided over by Dr. Henry M. McCracken. Here the entering class showed a gain of 20 per cent. over last year, the new class numbering 150.

Complications Arise for Spratling.—Further complications now tend to postpone indefinitely the appointment of a superintendent to Bellevue Hospital. The municipal service, which refused to accede to Dr. William P. Spratling's transfer to this position unless he should successfully pass a competitive examination, is now under charges made by the Civil Service Reform Association, which has not sufficient members at the present time to constitute a working quorum. Should a quorum set the date and hold the examination, and should Dr. Spratling compete and obtain the highest marking, the fact that Civil War veterans are on the eligible list might prevent his obtaining the appointment.

Report of Rockefeller Institute.—The second annual report of this institution has just been published. It deals largely with bacteriologic investigations of different forms of diarrhea in children. Twelve bacteriologists have had charge of the present investigation. Of 372 cases studied 73 proved fatal. The antidysenteric serum used was made from horses by the injection first of dead cultures and later of living cultures of dysenteric bacillus. Dr. L. Emmett Holt, in summing up the results of the work, states that the dysentery dejection seems to be contagious, but how and to what degree is not yet proved. The spreading takes place most likely through the discharges, and this calls attention to the necessity for disinfection and the close attention to prevent contamination of food or water. In all there were 83 cases in which the antidysenteric serum was employed; 38 of these were fatal. On the whole, the results were disappointing. Several factors worked against success. In a large proportion of the cases the serum was used late in the disease as a rule, was employed only in the most severe cases, and finally, at the beginning of the season, no rules had been formulated as to the size and frequency of dosage; hence it was evident that many of the doses were too small. Dr. Holt does not think from his personal observation that an adequate trial of the antidysenteric serum has yet been made. As a result of the investigations it is recommended that central distributing milk stations be established under city control, at least from May 15 to September 15, and that closer inspection of small milk dealers be instituted.

PENNSYLVANIA.

Combining Editor and Secretary.—Dr. Cyrus Lee Stevens, Athens, who has been for so long the efficient secretary of the Medical Society of the State of Pennsylvania, had added to his duties at the recent meeting those of editor and publisher of the *Pennsylvania Medical Journal.*

Typhoid in West Chester.—The typhoid fever situation in West Chester remains unchanged, and, indeed, the epidemic is more serious than at any time since the outbreak. Secretary Woodward of the board of health estimates the number of the cases as 30, and attributes the prevalence of the disease to sewage conditions. It has been observed that more cases have appeared along the milk route of William G. Embree, a dairyman. Of the 50 cases reported since March, more than 20 have occurred in families supplied with milk by this individual. He has been asked to withdraw from the business by the local board of health.

Meeting of State Medical Society.—The Medical Society of the State of Pennsylvania held its fifty-fourth annual convention in Pittsburg, September 27, 28 and 29. Dr. William B. Ulrich, president, Chester, called the meeting to order. Dr. Adolph Koenig, Pittsburg was elected president. The other officers elected were Drs. Erasmus V. Swing, Coatesville; Walter S. Stewart, Wilkesbarre; Joseph M. Corson, Chatham Run, and James B. Ewing, Uniontown, vice-presidents; Dr. Cyrus Lee Stevens, Athens, secretary; Dr. Theodore B. Appel, Lancaster, assistant secretary, and Dr. George W. Wagoner, Johnstown, treasurer. Scranton was selected as the place for the 1905 meeting.

Philadelphia.

Tropical Medicine at Jefferson.—Major Walter D. McCaw, surgeon, U. S. Army, will give the course in tropical medicine in Jefferson Medical College in place of Major Charles S. Kieffer.

Home from Abroad.—Dr. J. William White returned home after spending the summer in Europe. Most of his time abroad was spent in the Appenines.——Dr. and Mrs. John Marshall returned home after a lengthy tour of Europe.

Resignations.—Dr. Conlin C. Stewart, assistant professor of psychology; Dr. R. Max Goepp, instructor in physical diagnosis, and Dr. Charles E. Ruffell, assistant demonstrator of histology, in the Medical Department of the University, have resigned.

Donald Ross to Lecture.—Major Donald M. M. Ross, the famous English authority on malaria, will deliver a series of lectures in the Medical Department of the University of Pennsylvania some time during the year, on "Causes and Cure of Malarial Fever."

New Ambulance for German Hospital.—A modern ambulance was presented to the Jewish Hospital by the residents of Olney and vicinity. The presentation was made by Rev. William H. Wells, and it was accepted for the Hospital Association by Judge Mayer Sulzberger.

New Hospital for Chestnut Hill.—The new hospital erected in Chestnut Hill was opened for the reception of patients October 3. The hospital has been erected and will be maintained by the residents of the vicinity. Its purpose is to provide medical attention for the poor and needy of the neighborhood. Accommodations, however, have been provided for pay patients.

Honor Distinguished Visitors.—A reception in honor of Prof. Dr. Oscar Liebreich of Berlin was given by John V. Shoemaker at his residence October 1.——A special reception was given in honor of Sir Lauder Brunton, F.R.S., and Prof. T. Clifford Allbutt by the Medical Club, October 3, at which

Dr. Edward E. Montgomery presided.——Dr. Charles H. Frazier gave a dinner at the Bellevue-Stratford, September 28, in honor of Prof. Johannes Orth, Sir Clifford Allbutt, Sir Lauder Brunton, and Prof. Theodore Escherich.

Health Report.—The deaths for the week numbered 399, as compared with 401 during last week and 400 during the corresponding week of last year. Diphtheria was more prevalent than for several months past, 73 cases of the malady with 9 deaths being reported, as compared with 53 cases and 7 deaths during the preceding week. Typhoid fever is still on the increase, 80 cases with 7 deaths being recorded. Last week there were 97 cases and 7 deaths. The new cases this week, therefore, were 16 less than last week. A case of smallpox has appeared, and this necessitated the reopening of the smallpox hospital. In all, there were 200 cases of contagious disease reported, an increase of 14 over the previous seven days.

Exercises at Opening of University.—The University of Pennsylvania opened September 30, as stated in THE JOURNAL, October 1. After an address by Prof. Horatio C. Wood, Sir Clifford Allbutt, regius professor of physics, at Cambridge University, England, was introduced and made a brief address. Dr. John H. Musser made the formal address of the evening. He said that not as practical men following the profession as a business would they attain that success which means the fullness of life. As idealists alone they would fail to attain that happines which comes to a completed life. Only as men of science ever seeking the truth, would the fullness of life, the rounding out of a career, come to them in medicine. Other distinguished men present were Dr. Johannes Orth, the distinguished pathologist and successor of Virchow, of Berlin, Prof. Dr. Theodore Escherich of Vienna, the authority on diseases of children, Prof. Dr. Oscar Liebreich of Berlin, founder and editor of the *Therapeutische Monatschrift*, and Sir Lauder Brunton of London, the English authority in pharmacology and materia medica.

GENERAL.

Naval Medical School Opens.—The Naval Medical School, Washington, opened October 1 with 20 student officers in attendance. The only faculty change is that caused by the absence of Medical Director John W. Ross, who is on duty with the Panama Canal Commission, whose place on the faculty is filled by Medical Director Phillips A. Lovering.

Reciprocity Convention.—A meeting of the American Confederation of Reciprocating Examining and Licensing Boards will be held at the Hamilton Hotel, St. Louis, October 25. Reports are to be received and acted on as follows: Uniformity as to scope and character of examinations by state medical boards; uniformity of entrance and graduation requirements to be demanded of medical colleges; advanced standing and uniformity of forms.

Army Health Better.—The annual report of Surgeon-General Robert M. O'Reilly states that the health of the soldiers of the U. S. Army has improved during the past year. There were sent home on sick orders a number equal to 56.44 men per thousand troops. A provisionally favorable report on the treatment of leprosy is given, in view of the marked improvement said to have followed in the case of a soldier, a leper, now isolated at one of the southern army posts.

Tuberculosis Congress.—The so-called International Congress on Tuberculosis, at its session at St. Louis, adopted resolutions calling on all civilized governments to appoint commissioners of public health, with seats in the cabinets or governing bodies of their respective countries, in order to aid in checking the spread of tuberculosis. The question of municipal sanitaria was discussed, and a resolution passed urging government authorities to establish and maintain institutions where tuberculous patients may be isolated and where they may receive suitable treatment for their condition.

CANADA.

Foreign Visitors.—Sir Felix Semon, one of England's throat specialists, has been visiting Dr. H. T. Birkett of Montreal. He is a famous deer stalker in Scotland and has gone on a hunting trip into New Brunswick.——Dr. Thompson, a member of the British House of Commons, who is visiting medical institutions of America, is in Montreal inspecting the hospitals and medical colleges.——Dr. Squire Sprigge, London, England, is visiting in Toronto.

Strathcona's Gift to McGill.—At the opening of the winter session of the Faculty of Medicine of McGill University Dean Roddick announced that Lord Strathcona had contributed an additional $50,000 for the general purposes of the medical faculty. Lord Strathcona and Sir William Macdonald have each also contributed $25,000 toward the proposed new gymnasium. The opening lecture of the session was delivered by Professor Abbott of the University of Pennsylvania, the subject of whose address was "The Study of Medicine and Recent Advances in Medical Science."

Personal.—Dr. Simon J. Tunstall, Vancouver, B. C., president of the Canadian Medical Association, has been visiting in New York, Boston, Montreal and Toronto.——Mr. Irving H. Cameron, professor of surgery in the University of Toronto, has returned from England. Mr. Cameron headed a deputation consisting of Prof. J. J. McKenzie, Dr. G. H. Burnham and himself, which invited the British Medical Association to convene in Toronto in 1906. The council of that association recommended that the invitation be accepted. This will be the second occasion that the British Medical Association has convened in Canada.——Dr. J. A. Leduc, formerly a house surgeon at Notre Dame Hospital, Montreal, has gone to Boston to spend one year in the Civic Hospital, preparatory to taking up work in the new civic hospital to be attached to the new Notre Dame Hospital.

FOREIGN.

Beri-beri Among Japanese.—It is reported that beri-beri is causing considerable suffering among the Japanese troops at the seat of war.

Cholera in Russia.—It is reported that cholera has appeared at Nijni Novgorod and Saratov, towns of about 100,000 population, both situated on the Volga.

Fine for Misuse of von Noorden's Name.—The proprietor of a patent medicine in Germany was recently fined $125 for the statement that Professor von Noorden was pecuniarily interested in the manufacture of a certain pancreas extract.

Visit of French Medical Men to London.—A party has been organized at Paris to visit the medical institutions of London this month. Nearly 150 French physicians and surgeons have handed in their names to the committee, including about 20 professors in the medical faculty. Extensive preparations have been made in London for the reception of the visitors, including a banquet at the Hotel Cecil.

Number of Physicians in Russia.—The number of registered physicians in the Russian empire is now 21,827, of whom 737 are women. All but 2,659 reside in European Russia. Siberia has 788, the Caucasus district 1,224 and the Central Asia possessions 459. The last restrictions have been removed from the medical career for women, and the graduates of the woman's medical college at St. Petersburg now rank in every respect with the graduates of the other medical schools of the empire.

Queries and Minor Notes.

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

TREATMENT OF UNETHICAL MEMBERS OF COUNTY SOCIETIES.

A president of a county society in Kansas writes: "I have had some trouble in knowing just what to require of members. Nearly all of the members of our society are doing an ethical business but a few constantly advertise through locals in the daily papers by announcing births, operations, illness, etc.; also writing themselves up in the paper and letting it appear as though a reporter had done it. Some advertise themselves as medical institutes. Now, for the sake of the society we took these all in who were regularly licensed to practice, and hoped to be able to straighten them out in the society. What course should we pursue so as not to disrupt the society? Some of our members advocate leaving them alone, and others desire stringency. Should this be governed by special enactment by our local society or is it covered by state or national rules? I have the 'Principles of Ethics,' but it is hardly explicit enough for this case."

ANSWER.—There are county medical societies whose members are of broad caliber and liberal spirit that during reorganization received into membership every regularly licensed physician in the county. The original members, actuated by the true and kindly spirit of professional brotherhood, hoped thus to be able to reform the sinners. In some instances their efforts have met with failure, and some of the new members persist in advertising through locals

in the daily papers by announcing births, operations, illnesses and adding their own names. This is petty business, but decidedly reprehensible. If the public was yet sufficiently well posted to realize that those physicians who feel the need of doing this have not much else to commend their services, the matter could be left to natural evolution for its cure, which would, of course, be accomplished by elimination. Unfortunately the public is not prepared to care for itself in this respect, so that the organized profession must act, no matter how unpleasant may be the performance of duty. Such members first should be confidentially interviewed by a tactful committee and urged to do better, and intimation should be made that unless this is done they must forego the real benefits of organization. In case of members who sell themselves to quack advertising institutions the society's duty is clear. These should be told that they must make choice between the society and the institution. In case of refusal to cease advertising by alias they should be expelled. Those offenders who are openly regular, but who secretly have their cases more or less fully "written up" for the newspapers, are usually hard to get at, because of the difficulty of obtaining evidence of their secret peccadillo, and frequently because their professional prominence is such that few, if any, desire to talk directly to them as should be done. Tactful older members should be entrusted with this task whenever possible. Such offenders will very seldom require expulsion. In all cases of ethical shortcoming the county society ought always to approach the judgment seat in a spirit of largest charity toward the erring brother. Few of us are without sin. The temptations of competition for existence in an overcrowded profession are great. But the chronic sinner who, after repeated warning and forgiveness, fails to live a professionally decent life has no place in the organization. As to special rules to govern particular misdemeanors, each county society is fully authorized to legislate for itself. The "Principles of Ethics," by resolution of the American Medical Association, was declared to be a "suggestive and advisory" document. As such, and it is a pure and altruistic guide, it should suggest the spirit of the ethical legislation of each county society. The "Principles of Ethics" provides no penalties, this being left entirely to the judgment of the county society. Legislation may thus be varied to suit local needs, and the way is open for interesting simultaneous experiments to determine the most effective methods of maintaining an approximation to the highest ideals of professional deportment. Most of us do not yet realize the many possibilities for professional growth that have been opened up by the reorganization.

AGGLUTINATION TEST FOR TYPHOID.

To the Editor:—Will you give in THE JOURNAL the method for the improved test for typhoid, as mentioned in your editorial some weeks ago: also Ruediger's improvement on it, and where published? J. WHALEY.

ANSWER.—Ruediger's "Improved Technic of Agglutination in Typhoid Fever" appeared in *The Journal of Infectious Diseases*, 1904, vol. i, p. 236. The method may be briefly summed up as follows: Inoculate a large quantity of plain bouillon (100 to 500 c.c.) with a recently isolated typhoid bacillus, incubate at 36 C. for 24 hours, and then add 1 c.c. formalin for every 100 c.c. of culture. This kills the organisms, and the mixture may be kept for future use, but it must be shaken before using. To make a test proceed as follows: From the lobe of the ear collect 4 drops of blood in a test tube, or a small vial, containing 2 c.c. of a 1/500 solution of formalin in distilled water. This lakes the blood, making a clear solution of a dilution of 1/10. To 1 c.c. of this solution add 4 c.c. of the formalinized culture, making a dilution of about 1/50, and set it aside where it will not be shaken. If there is agglutination, the organisms collect in clumps, and within an hour or two are seen as a flocculent precipitate slowly settling toward the bottom. It is always best to make a control tube with normal blood, or by simply adding 1 c.c. of distilled water to 4 c.c. of formalinized culture. The control tube should remain uniformly turbid. The mixture of blood and formalinized culture may also be studied under the microscope in the form of a hanging drop, when agglutination will be observed in the usual way. When dried blood must be used, collect 4 drops on a glass slide, spread it a little by tilting the slide, and allow it to dry. This may later be dissolved in 2 c.c. of distilled water, making a dilution of 1/10, which is used as directed for the solution of fresh blood.

PHYSICIANS' CARDS.

CHICAGO, Sept. 24, 1904.

To the Editor:—Will you inform me if the following card is proper, or would it be better form to omit the word "oculist"?

DR. JOHN JONES,
OCULIST.
Hours: 9 to 1. Bay State Building, Chicago.

ANSWER.—If unwritten laws, which are the most binding of all regulations, were uniform throughout the country, it would be an easy matter to reply to this question. It is to be regretted that invariable rules governing such matters do not exist in the United States. Thus, the appearance of the word "oculist" on the professional card of a physician would be resented as a deadly offense in some sections of the country, but would be regarded with equanimity and probably with approval in other localities. On the whole, it is not considered good form, and we think there is reason for this. In the first place, the good old word oculist has been made much use of, by charlatans and by others who would divorce ophthalmology from medicine, so that its employment to designate one who limits his practice to diseases of the eye has somewhat fallen into disrepute. We would, therefore, suggest to our correspondent, if he feels called on to place any qualifying phrase on his card, that he use the words, "Practice limited to diseases of the eye."

REQUIREMENTS FOR PRACTICE IN MEXICO AND SOUTH AMERICA.

————, MANITOBA, Sept. 27, 1904.

To the Editor:—What are requirements to practice medicine in South America and in Mexico? Which part of either country would be suitable so far as climate and practice is concerned?
C. W. M.

ANSWER.—We understand that, in order to be a legally qualified practitioner of medicine in Mexico, it is necessary to pass an examination. The examinations vary in the different states, but all are conducted in Spanish and are very severe. In South America a knowledge of Spanish is required, and all examinations, which are principally oral, are conducted in Spanish. The climate varies according to locality, of course.

GRATUITOUS SERVICES TO DENTISTS.

OKLAHOMA CITY, OKLA., Oct. 2, 1904.

To the Editor:—Are physicians bound by any law or code of ethics to furnish gratuitous services to the family of a dentist who is not a physician? A case is now pending in our court, in which a physician is trying to recover a fee from a dentist for services rendered to his child, and the dentist claims that he is entitled to exemption from the payment of physicians' fees, on ethical grounds; and he claims that certain physicians will corroborate his statement in court. Please enlighten the readers of THE JOURNAL on this subject, so they may be enabled to testify intelligently.
S.

ANSWER.—Physicians are not "bound" to give gratuitous services to anyone.

Marriages.

FRANK A. METCALF, M.D., to Miss Rebecca L. Day, both of Chicago, September 21.

SHEPHERD A. WARE, M.D., to Miss Clarice Duncan, both of Springfield, Ill., August 15.

FRANK C. PARKER, M.D., to Miss Grace Croft, both of Norristown, Pa., September 22.

CHARLES A. HENRY, JR., M.D., Fostoria, Ohio, to Miss Mae Weatherson of Chicago, October 4.

ALFORD J. FARNHAM, M.D., Reinbeck, Iowa, to Miss Lillian Burns, in Waterloo, Iowa, September 14.

JAMES HOLLINGSWORTH, M.D., Avon, S.D., to Miss Grace Burgess of Vermillion, S.D., September 28.

VINCENT ALLAN FARRELL, M.D., to Miss Marie Delight Gregory, both of Mason City, Iowa, October 5.

J. W. BOWDOIN, M.D., Accomac County, Va., to Mrs. N. D. Pitman, at Newport News, Va., September 22.

HORACE C. DODGE, M.D., Steamboat Springs, Colo., to Miss Nelle A. Dyche of Sabetha, Kan., September 28.

FRANK SCOTT, M.D., to Miss Elizabeth Williams, both of West Virginia, at Roanoke, Va., September 19.

ALBERT B. REKERSON, M.D., Mount Vernon, N. Y., to Miss Mary E. Breck of New York City, September 20.

THOMAS ALLEN GROVER, M.D., Washington, D. C., to Miss Ida Holden Rhodes, at Carterville, Va., September 21.

MORRISON LE ROY HAVILAND, M.D., Glens Falls, N. Y., to Miss Mabel E. West, at Lake George, N. Y., September 8.

HENRY MARVIN HODGSON, M.D., Lonaconing, Md., to Miss Lutalie Shepherd Wilson, Allegany Grove, Allegany County, Md., September 15.

Deaths.

Phineas J. Horwitz, M.D. University of Maryland School of Medicine, Baltimore, 1845, of Philadelphia, died at Bar Harbor, Maine, September 28, aged 82. Dr. Horwitz entered the United States Navy as assistant surgeon in 1847. During the Mexican War he had charge of the naval hospital at Fontera De Tobasco. Later he was made assistant chief of the Bureau of Medicine and Surgery in the Navy Department, and subsequently Surgeon-General during the latter part of the Civil War. In 1871 he

was made medical inspector, and later medical director. From 1877 until 1883 he had charge of the Naval Asylum in Philadelphia, and was made president of the Examining Board the following year. He retired from the Navy in 1889.

Israel P. Klingensmith, M. D. Jefferson Medical College, Philadelphia, 1875, a member of the American Medical Association, British Medical Association, ex-vice-president of the Medical Society of the State of Pennsylvania, fellow of the American Electro-Therapeutic Association, president of the Indiana County Medical Society, ex-president Westmoreland County Medical Society, local surgeon for the Pennsylvania railroad since 1876, medical director of the Blairsville Infirmary, died at his home in Blairsville, Pa., September 27, after an illness of more than four months, which began with pneumonia and ended in paresis, aged 54.

Thomas H. Williams, M.D. University of Maryland School of Medicine, Baltimore, 1848; assistant surgeon and medical director U. S. Army from 1849 to 1858; resigned at outbreak of Civil War, and became successively surgeon, medical director, inspector of hospitals and assistant surgeon-general in the Confederate service, died suddenly at his home in Cambridge, Md., September 17, from apoplexy, aged 75.

Joseph Bion Scott, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1881, a physician of marked ability, a keen diagnostician and a successful practitioner of Gettysburg, Pa., who had been under treatment for nervous disease due to persistent overwork, hung himself at the Friend's Asylum for the Insane, Frankford, Pa., September 24, aged 48.

Edward P. Catlin, M.D. Rush Medical College, Chicago, 1865, assistant surgeon of the 152d Illinois Volunteer Infantry in the Civil War; for many years a member of the Winnebago County Medical Society, which gave a banquet in his honor on Feb. 10, 1903, died from Bright's disease at his home in Rockford, Ill., September 26, aged 67.

George R. Reynolds, M.D. University of Michigan Department of Medicine and Surgery, Ann Arbor, 1867, for four years postmaster of Plymouth, Ind., while driving across the Pennsylvania Railway tracks at Jacoby's Crossing, near his home in Plymouth, September 25, was struck by a train and instantly killed, aged 63.

John Jackson Selman, M.D. Medical College of Ohio, Cincinnati, 1838, said to have been the oldest physician in Iowa; a member of the committee that framed the constitution of the state, state senator and president of the senate, died at his home in Bloomfield, Iowa, September 25, aged 86.

J. Lively Johnson, M.D. University of Louisville Medical Department, 1884, died at his home in Louisville, October 4, from typhoid fever. He was a member of the Jefferson County Medical Society, Kentucky State Medical Society and the Mississippi Valley Medical Association.

Arthur G. Watson, M. D. University of Maryland School of Medicine, Baltimore, 1872, a member of the Baltimore City Council, died at the Church Home and Infirmary, Baltimore, September 29, after an unsuccessful operation for malignant disease of the bowel, aged 53.

Charles Burr, M.D. Berkshire Medical College, Pittsfield, Mass., 1839, for 50 years a practitioner of Carbondale, Pa.; some-time president of the Luzerne County, Lackawanna and Carbondale medical associations, died at his home in Carbondale, September 19, aged 89.

Juan N. Navarro, M.D. School of Medicine in the City of Mexico, surgeon-general of the Mexican Army throughout the war with Maximilian, consul-general for Mexico to the United States, died at his home in New York City, September 24, 1904, from apoplexy, aged 81.

Henry C. Wheeler, M.D. Jefferson Medical College, Philadelphia, 1877, died at his home in Carbondale, Pa., from paralysis, after an illness of several weeks, aged 54. He was one of the founders of the Carbondale Board of Health, and established a hospital there in 1899.

Thomas Devereux, M.D. Minneapolis College of Physicians and Surgeons, 1901, Army Medical School, 1903, first lieutenant and assistant surgeon, U. S. Army; a native of Minnesota, died at Manila, P. I., from acute tuberculosis, September 24.

William Conrad, M.D. Tulane University of Louisiana, New Orleans, 1897, not Charles Conrad, as erroneously announced last week, committed suicide by shooting himself through the heart, at his home in Cleveland, September 19, aged 35.

Silas Updegrove, M.D. Department of Medicine, University of Pennsylvania, Philadelphia, 1854, a member of the American Medical Association, and at one time coroner's physician, died at his home in Philadelphia, October 1, aged 75.

Alexander Crawford, M.D. Kentucky School of Medicine, Louisville, 1854, for many years a practitioner of Bardstown, Ky., was killed in a wreck on the Southern Railway at Newmarket, Tenn., September 24, aged 68.

Albion Westley Johnson, M.D. University of Vermont, Burlington, 1861, an old practitioner of Kittery, Maine, died at the Cottage Hospital, Portsmouth, N. H., September 19, after a long illness, aged 76.

James W. Carter, M.D. Kentucky School of Medicine, Louisville, 1881, of Emma, Texas, was shot and killed while playing a practical joke on a friend at Estacado, Texas, September 22.

George H. Williams, M.D. St. Louis Medical College, 1882, for eight years physician to the Missouri State Penitentiary, died at Jefferson City, Mo., September 27, after a lingering illness.

John Lowe Free, M.D. University of Maryland School of Medicine, Baltimore, 1848, died at his home in Stewartstown, Pa., where he had practiced since 1850, September 27, aged 83.

P. Paul Boulanger, M. D. Laval University, Quebec, 1892, founder and manager of *La Revue Médicale du Canada*, died at his home in Montreal, September 29, after a short illness.

George S. Conant, M.D. Bellevue Hospital Medical College, New York City, 1877, died at his home in New York City, September 23, from diabetes, after a long illness, aged 51.

John Purcell, M.D. Apothecaries' Hall, Dublin, Ireland, 1841, for 30 years a physician of New York City, died at his summer home in Larchmont, N. Y., September 26, aged 86.

William D. Vaughan, M.D. Rush Medical College, Chicago, 1897, died September 23, at his home in Norwood, Cincinnati, from tuberculosis, after a long illness, aged 29.

Carl F. W. Kordenat, M.D. College of Physicians and Surgeons of Chicago, 1887, died at his home in Reedsburg, Wis., September 21, from consumption, aged 50.

Wallace M. Purcell, M.D. Jefferson Medical College, Philadelphia, 1862, of Cummings, Ind., died at the home of his daughter in Parke County, September 24.

John J. Mackey, M.D. Bellevue Hospital Medical College, New York City, 1882, of Brooklyn, N. Y., died at Bergen Beach, September 24, aged 50.

John M. Steck, M.D. Jefferson Medical College, Philadelphia, 1882, died at his home in Smithsburg, Md., September 23, from cerebral meningitis, aged 51.

Reinhard Wernigk, M.D. Rush Medical College, Chicago, 1882, died at his home in Alhambra, Cal., September 16, after a lingering illness, aged 73.

Albert G. Rogers, M.D., for 30 years a practitioner of Carrollton, Mo., and once mayor of that city, died in Buckhorn, Cal., September 7, aged 72.

Neemias B. Cole, M.D. Long Island College Hospital, Brooklyn, N. Y., 1890, died at his home in Phoenix, Ariz., September 11, aged 67.

Samuel Martin Hileman, M.D. Medical College of Virginia, Richmond, 1862, died at his home in Kerr's Creek, Va., September 21.

Joseph W. Gibson, M.D. Northwestern Medical College, St. Joseph, Mo., 1892, died at his home in Utica, Mo., August 24, aged 47.

W. W. Wickham, M.D. McGill University, Montreal, of Charlottetown, P. E. I., died at Ste. Agathe, Quebec, September 24.

Michael W. Gray, M.D. Philadelphia College of Medicine and Surgery, 1854, died at his home in Cave Spring, Ga., recently.

David Hardie, Jr., M.D. Philadelphia, 1901, died at his home in Wilmington, Del., from Bright's disease, September 21.

R. M. Mitchell, M.D. died at his home in Dry Grove, Miss., September 15, after a long illness, aged 75.

L. G. Murphy, M.D., died at the home of his son in Kansas City, Mo., September 23, aged 75.

Columbus H. Felts, M.D. Illinois, 1883, died at his home in Clark Center, Ill., in August.

Francis Moro, M.D. Ohio, 1844, died at his home in Warsaw, Ind., September 11, aged 80.

M. K. Church, M.D. Merrickville, Ont., died on September 14, aged 76.

State Boards of Registration.

COMING EXAMINATIONS.

Regular Board of Medical Examiners of Georgia, Capitol, Atlanta, October 11. Secretary, I. H. Goss, M.D., Athens.

State Medical Board of the Arkansas Medical Society, Little Rock, October 11. Secretary, J. P. Runyan, M.D., Little Rock.

Kansas Medical Board, State House, Topeka, October 11-14. Secretary, G. F. Johnston, M.D., Lakin.

Michigan State Board of Registration in Medicine, Lansing, October 11-14. Secretary, B. D. Harison, M.D., Sault Ste. Marie.

Illinois State Board of Health, Great Northern Hotel, Chicago, October 12-14. Secretary, J. A. Egan, M.D., Springfield.

Board of Medical Supervisors of the District of Columbia, Washington, D. C., October 13. Secretary, Wm. C. Woodward, M.D., Washington, D. C.

Board of Medical Examiners for the State of Texas (Regular), Dallas, October 18. Secretary, M. M. Smith, M.D., Austin.

State Board of Medical Examiners of New Jersey, Trenton, Tuesday, Tuesday evening and Wednesday, October 18-19. Secretary, E. L. B. Godfrey, M.D., Camden.

Louisiana State Board of Medical Examiners, New Orleans, October 21-22. Secretary, Felix A. Larue, M.D., New Orleans.

Board of Medical Examiners of the State of California, San Francisco, October 25. Secretary, Charles L. Tisdale, M.D., Alameda.

Virginia June Report.—Dr. R. S. Martin, secretary of the Medical Examining Board of Virginia, reports the written examination held at Richmond, June 21-24, 1904. The number of subjects examined in was 9 and the percentage required to pass 75. The total number examined was 114, of which 88 passed and 26 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Medical College of Virginia, (1899) 75, (1903) 75, 84; (1904) the grade of 75 was reached by two, 76 by one, 77 by four, 78 by seven, 80 by four, 81 by three, 82 by three, 83 by one and 84 by one.		
Barnes Medical College, St. Louis	(1904)	76
University of the South, Tennessee	(1904)	75, 77, 80
University College of Medicine, (1903) 81, 82, 83; (1904) the grade of 75 was reached by one, 77 by three, 78 by one, 79 by two, 80 by three, 82 by two, 83, 84, 88, 89 and 91 by one each.		
Jefferson Medical College	(1904)	81
Baltimore University	(1903)	75
Hahnemann Medical College	(1904)	75, 76, 77
University of Virginia (1902) 80, 85; (1903) 76, (1904) 77, 78, 81, 86.		
Johns Hopkins Medical College	(1903)	76
Leonard Medical College	(1904)	77
Columbian University	(1898) 85, (1904)	83
University of Maryland	(1903) 75, 77; (1904)	78, 80
University of Louisville	(1892) 75, (1904)	79
Baltimore Medical College	(1903)	78
Kentucky School of Medicine	(1904)	86
Louisville Medical College	(1891) 75, (1903)	75, 79
Hospital College of Medicine	(1889)	75
Medico-Chirurgical College, Philadelphia	(1889)	75
College of P. and S., Baltimore	(1886) 80, (1892)	75
Vanderbilt University	(1894)	75
University of Tennessee	(1900)	75
University of Cincinnati	(1902)	78

FAILED.

University College of Medicine	(1903) 73, (1904)	72
Maryland Medical College	(1903) 72, (1904) 54, 54, 56, 70	
Leonard Medical College, (1902) 69, 73; (1903) 72, 73; (1904) 57, 60, 69, 70, 70.		
University of Maryland	(1903) 63, (1904)	64
Medical College of Virginia	(1901) 73, (1904)	72, 73
College of P. and S., Boston	(1903)	73
University of the South	(1903)	73
Illinois Medical College	(1904)	57
Baltimore Medical College	(1903)	63
Tennessee Medical College	(1900)	60

The general average for all representatives of the Medical College of Virginia who passed was 79.3; of the University College of Medicine, 81.3; of the University of Virginia, 80.3.

Tennessee April Report.—Dr. T. J. Happel, secretary of the State Board of Medical Examiners, reports the written examinations held at Memphis, Nashville and Knoxville, April 5 and 6, 1904. The number of subjects examined in was 8; total questions asked, 64; percentage required to pass, 75. The total number examined was 278, of whom 166 passed and 112 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
University of Tennesese, Nashville, (1883) 75, (1890) 75, (1894) 75, (1896) 75, (1899), 79, (1903) 81, (1904) 75, 75, 85, 86, 83.5.		
Baltimore Medical College	(1898)	87.5
University of Nashville (1901) 84, (1903), 75, 75.7; (1904) 75, 75, 76, 80, 82, 85, 87, 90.7.		
Kentucky School of Medicine	(1903) 78, (1904)	75, 93.5
Hospital College of Medicine, Louisville, (1900) 75, (1904) 75, 96.		
Kentucky University, Louisville	(1904)	75
Vanderbilt University, (1881) 75, (1886) 75, (1888) 75, (1891) 75, (1893) 79.5, (1894) 74, (1904) 75 by one, 76 by one, 79 by two, 80 by one, 81.5 by three, 82, 84.8 and 85 by one each, 86 by four, 89 by one, and 92 by one.		
University of Louisville	(1894) 83.5, (1904) 79, 87, 94	
Meharry Medical College	(1904) 76, 77, 78, 78, 79, 84, 85.6	
University of the South, Sewanee	(1898) 88, (1903	73
College of P. and S., Baltimore, (1876) 75, (1893) 89.5, (1901) 82.		
Univ. of Louisiana, New Orleans	(1874) 75, (1896)	75
Memphis Hosp. Med. College, (1891) 75, (1897) 75, (1899) 80, 79; (1900) 81, (1901) 75, 82; (1903) 75, 83, 83; (1904) the grade of 75 was reached by two, 80 by two, 81 by two, 84 by two, 85 by two, 87 and 88 by one each.		
Chattanooga Medical College, (1893) 75, 81; (1900) 76.5; (1901) 75; (1903) 78, 78, 81; (1904) the grade of 75 was reached by three, 81 and 83 by one each.		
University of Pennsylvania	(1869) 75, (1893) 91, (1901)	77
Tennessee Med. Coll., Knoxville	(1894) 75, (1904)	75, 83
Maryland Medical College	(1903)	84
National Med. Coll., Washington, D. C.	(1897)	78
Hering Med. Coll., Chicago	(1903)	76
Atlanta Med. Coll., Georgia	(1876)	75
Jefferson Med. Coll., Philadelphia	(1890)	75
Johns Hopkins Med. Coll.	(1903) 85, (1904)	75
Medical College of Ohio	(1871)	75
Botanical College of Memphis	(1857)	75
Louisville Med. College	(1888)	78

Non-graduates: The grade of 75 was reached by ten, 76 by four, 78 by four, 79 by one, 80 by two, 81 by one, 82 by one, 83 by six, 84 by three, 85 by three, 86 by three, 87 by two, 88 by two, 89 by two, and 94 by two.

FAILED.

Chattanooga Med. College	(1899) 70, (1902)	69
Grant University	(1898) 63.5, (1899) 61, 62; (1903)	73
Meharry Med. Coll.	(1904) 59, 60, 69, 73	
University of Tennessee, (1893) 44, (1895) 43, (1903) 56, 63; (1904) 50, 65, 68, 61.		
University of Nashville	(1904)	58
Tennessee Medical College	(1904)	61, 71
Atlanta Medical College	(1902) 60, (1894)	55
Memphis Hosp. Med. College	(1904) 69, 68, 61, 43	
Georgia College of Medicine	(1901)	50
Physio-Medical Coll., Marion, Ind.	(1896)	55
Starling Medical College, Ohio	(1896)	62
Knoxville Medical College	(1902)	40
College of P. and S., Chicago	(1900)	61

Non-graduates: The grade of 7.5 was reached by one, 25 by one, 30 by two, 34 and 42 each by one, 45 by two, 49 by one, 53 by one, 54 by two, 55 by three, 56 by two, 58 by one, 59 by two, 61 by two, 62 by one, 63 by three, 64 by three, 65 by two, 66 by three, 67 by three, 68 by five, 69 by three, 70 by two, 71 by four, 72 by eight, 73 by twelve, 74 by five.

The general average of all representatives of the University of Tennessee who passed was 78.5; for all representatives of the University of Nashville who passed, 80.4; for all representatives of Vanderbilt University who passed, 81.4; for all representatives of Meharry Medical College who passed, 78.1; for all representatives of Memphis Hospital Medical College who passed, 81; for all non-graduates who passed, 80.9.

Association News.

NEW MEMBERS.

List of new members for the month of September, 1904:

ARIZONA.

Palmer, R. F., Roosevelt.

ARKANSAS.

Cleveland, J. C., Bald Knob.
De Woody, L. C., Stamps.
Greenway, G. C., Hot Springs.
Gardner, D. M., Ft. Smith.
Henry, J. T., Eagle Mills.
Johnston, Sam'l, Blytheville.
King, Harry C., Bonanza.
Reed, C. A., Eureka Springs.
Schoppach, Annie A., Little Rock.
Smith, C. P., Arkansas City.
Terry, P. E., Brinkley.
Young, J. M., Little Rock.

CALIFORNIA.

Selfridge, Grant, San Francisco.
Mace, Lewis S., San Francisco.
Bates, Walter E., Davisville.
Friary, Lewis A., Napa.
Gregory, Idris B., Ontario.
Orr, Jane, Oakland.

COLORADO.

Van Zant, Chas. B., Denver.
Warner, Eugene R., Denver.
Holder, Chas. A., Colorado Springs.
Madden, J. H., Colorado Springs.
Biles, J. A., Amethyst.
Clark, L. H., Mancos.
Carr, R. W., Monte Vista.
Johnson, Abijah, Montrose.
Kaylor, Jas. W., Durango.
Ogilbee, H. M., Manitou.
Rowan, W. W., Ouray.

CONNECTICUT.

Sloan, T. G., So. Manchester.

DISTRICT OF COLUMBIA.

Adams, A. C., Washington.
Ellyson, R. M., Washington.
Holmes, Mary, Washington.
Mitchell, Jas. F., Washington.
Shaw, John W., Washington.
Werber, G., Washington.
Wellington, J. R., Washington.

FLORIDA.

Daniel, R. P., Jacksonville.
Terry, C. E., Jacksonville.
Puterbaugh, A. D., Branford.
Snow, H. O., Floral City.
Edgar, J. L., Ft. Harrison.
Jones, D. L., Palmetto.
Knight, J. C., Plant City.
Miller, William, Ormond.

GEORGIA.

Black, A. H., Thomaston.
Blackburn, D. H., Oguchee.
Chauncey, Marion G., Cartersville.
Horsley, Jos. S., West Point.
Harris, Heller W., Dawson.
Lovvorn, Wm. P., Cecil.
Mobley, Robt. H., Mt. Vernon.
Spangler, N. L., Donalsonville.
White, A. T., Atlanta.

INDIAN TERRITORY.

Long, Dock, Duncan.
Cooke, J. E., Wynnewood.

IDAHO.

Stewart, Jas. L., Boise.
Dutton, C. L., Meridian.
Hurlbert, J. F., Lewiston.
Kirtley, C. L., Custer.
Price, B. A., Rigby.

ILLINOIS.

Newell, Mary Eliz., Braidwood.
Sisson, Charles E., Elgin.
Patton, F. P., Glencoe.

INDIANA.

Carey, W. W., Ft. Wayne.
Yung, J. Rudolph, Terre Haute.
Barnfield, J. H., Logansport.
Allen, George S., Dyer.
Clark, Robert J., Monticello.
English, E. C., Rensselaer.
Green, W. L., Pekin.
Imel, E. S., Petersburg.
Linvill, D. S., Columbia City.
Stewart, Charles S., Auburn.
Schulz, Herman S., La Fayette.
Thiebaud, H. M., Vevay.
Uhner, David R., Alexandria.

IOWA.

Allen, W. L., Pella.
Brown, C. F., Centerville.
Buzzard, I. S., Russell.
Carpenter, L. J., Sully.
Crippen, J. H., Waterloo.
Gillespie, J. A. Coin.
Howe, J. E., Greenfield.
Hills, S. C., Creston.
Harris, W. T., Keosauqua.
Heady, C. C., Bloomfield.
Kirkpatrick, Wm. J., Farmington.
Kirby, S. C., Grand Junction.
Nicoll, D. T., Clarence.
Oliver, L. B., Sigourney.
Overholt, J. L., Columbus Junction.
Patterson, C. E., Sumner.
Potter, H. C., Des Moines.
Rohlf, E. L., Waterloo.
Stafford, R. H., Sumner.
Sutton, R. H., Shenandoah.
Thomas, S. W., Newbern.
Wilder, J. J., Kingsley.
Wright, W. A., Thayer.
Weaver, A. J., Muscatine.
Williams, J. A., Belle Plaine.
Wherry, J. W., Clarinda.

KANSAS.

Mulvane, G. J., Topeka.
Purves, G. K., Wichita.
Brawley, M. A., Frankfort.
Cummings, J. S., Bronson.
Hallernbeak, G. W., Cimarron.
Leslie, Charles B., Meade.
McCreight, M. S., Oskaloosa.
Main, G. W., Overbrook.
McCammon, J. A., Reamsville.
McPherson, O. P., Great Bend.
Morgan, B. F., Clay Center.
Skinner, Benj., Wetmore.
Simmons, C. J., Lawrence.
Stillman, C. C., Morganville.
Tull, G. A., Clay Center.

LOUISIANA.

Eshleman, C. L., New Orleans.
Martin, Jos. D., New Orleans.
Gulibeau, Arthur, Breaux Bridge.
Lambert, J. W., Tangipahoa.
Lawrason, Geo. B., Shreveport.
Milstead, N. J., Waverly.
Wilson, Geo. F., Blenville.

MAINE.

Durgin, H. I., South Eliot.
Johnstown, Charles E., Kittery Point.
Nickerson, H. M., Portland.
O'Neill, E. D., Biddeford.

MARYLAND.

Aydelotte, J. S., Snow Hill.
Chatard, J. A., Baltimore.
Kennard, H. W., Baltimore.
Simmons, T. W., Hagerstown.

MASSACHUSETTS.

Brush, Frederic Brush, Boston.
Boland, E. S., Boston.
Codman, E. A., Boston.
Chase, W. G., Boston.
Hodges, A. D., Boston.
Libby, E. N., Boston.
Murphy, F. T., Boston.
McDonald, S. J., Boston.
Osgood, R. B., Boston.
Quackenboss, Alex., Boston.
Smith, G. C., Boston.
Stone, A. K., Boston.
Scudder, C. L., Boston.
Stone, James S., Boston.
Thomas, J. J., Boston.
Thorndike, T. W., Boston.
Towle, Harvey P., Boston.
Walton, George L., Boston.
Averill, Geo. G., Cambridge.
Blodgett, H. P., So. Framingham.
Brewster, Mary J., Northampton.
Bragg, L. R., Webster.
Cutter, A. H., Lawrence.
Clark, T. F., Taunton.
Harrower, David, Jr., Worcester.
Henderson, Geo. D., Holyoke.
Jackson, Wm. B., Lowell.
Jones, Gilbert N., Wellesley Hills.
Jones, Claud P., Somerville.
Kurth, G. E., Lawrence.
King, J. A., Millville.
Lovell, Chas. D. S., Lynn.
Mead, Geo. N. P., Winchester.
Mead, Julian A., Watertown.
Mackay, Edw. H., Clinton.
Priest, H. B., Groton.
Richardson, Chas. H., Pittsfield.
Spalding, F. M., Cambridge.
Swasey, Edw., Worcester.
Sylvester, W. H., Natick.
Taylor, James, Sr., Worcester.
Tupper, A. M., Rockport.
Yeaton, Geo. W., Medway.

MICHIGAN.

Tolley, E. W., Grand Rapids.
Bourdeau, Patience S., Grand Rapids.
Anderson, H. B., Traverse City.
Belknap, W. H., Greenville.
Doyle, C. P., Frankfort.
Ellis, Ellsworth S., Manistee.
Edmonds, Gerold O., Honor.
Heysett, F. W., Freesoil.
Knowles, Girard F., Manistee.
Kirkbridge, W. J., Fountain.
Lester, Will H., Greenville.
Martin, W. C., Scottville.
McGillicuddy, Jas., Shepardsville.
Nichols, A. W., Manistee.
Robinson, H. D., Manistee.
Smale, G. A., St. Charles.
Townsend, L. S., Six Lakes.
Weller, W. M., Ithaca.

MINNESOTA.

Sedgwick, J. P., Eveleth.

MISSOURI.

Jonas, Ernest, St. Louis.
Barnes, R. H., St. Louis.
Powell, C. H., St. Louis.
Soper, Horace W., St. Louis.
Zahorsky, John, St. Louis.
Gamble, D. C., St. Louis.
Creveling, H. C., St. Louis.
Jacobson, Henry, St. Louis.
Keeble, R. R., St. Louis.
Lange, A. F., St. Louis.
Luton, L. S., St. Louis.
Bailey, F. W., St. Louis.
Patterson, F. A., St. Joseph.
Hill, Howard, Kansas City.
Boggan, P. P., East Prairie.
Burkhalter, C. F., Higbee.
Bridges, A. C., Kahoka.
Barnhart, D. A., Huntsville.
Case, Zophar, Warrensburg.
Enloe, I. N., Jefferson City.
Gerwig, H. E., Downing.
Hubbard, J. D., Sedalia.
Mairs, E. J., Newtown.
Morrison, W. S., Rushville.
Nesbitt, E. P., Sheridan.
Porter, J. E., Knob Noster.
Reid, H. L., Charleston.
Sevier, Robert, Richmond.
Schwab, B. C., Ardmore.
Smith, B. F., Southwest City.
Will, S. J., Mehlville.
Wallis, J. R., Montrose.
Zillman, A. W., Indian Grove.
Wood, Leroy M., Pleasant Hill.

MONTANA.

Freund, J. B., Munters Hot Springs.

NEBRASKA.

Alton, W. A., Elmwood.
Blanchard, J. S., Kearney.
Callender, J. M., Thedford.
Curtis, J. M., Ft. Calhoun.
Clark, Chas. F., Omaha.
Day, Clinton, Broken Bow.
Hess, George J., Chambers.
Lusk, William A., Trumbull.
Likens, W. E., Paxton.
McClurg, T. C., Exeter.
Neely, J. M., Elmwood.
Person, Sylvanus, Stanton.
Rosenberg, Frank J., Lexington.

NEW HAMPSHIRE.

Annable, Edwin G., Concord.
Boutwell, H. W., Manchester.
Blanchard, Roscoe G., Dover.
Davis, Geo. M., Manchester.
Dodgson, E. P., Lakeport.
Haskett, Pearl T., Sanbornville.
Jarvis, Leonard, Claremont.
Theriault, Joseph, Concord.
Tolman, Geo. A., Dover.
Wheeler, John, Plymouth.

NEW JERSEY.

Brown, J. S., Montclair.
Dix, J. M., Capt May C. H.

NEW MEXICO.

Gilbert, Jessie R., Alamogardo.
Watson, T. W., Lincoln.

NEW YORK.

Koonz, Albert E., New York City.
Lawler, Michael J., Carthage.
Smith, Herbert B., Corning.

NORTH DAKOTA.

La Rose, Victor J., Mandan.

OHIO.

Morgearoth, S., Akron.
Cooper, Joseph W., Bellaire.
Kotershall, Jos. J., Cleveland.
Ingram, Robert, Cincinnati.
Cheney, W. G., Portsmouth.

OKLAHOMA.

Zugg, Clarence Logan, Orlando.
Wiley, Geo. W., Granite.

OREGON.

Cardwell, Herbert W., Portland.
Wilson, Holt C., Portland.
Panton, A. C., Portland.
Smith, Willard, La Grande.
Bigges, Geo. Lee, La Grande.
Herndon, J. S., Ashland.

PENNSYLVANIA.

Richards, Oscar M., Easton.
Love, J. King, Easton.
Ray, George S., Erie.
Kenworthy, Frank, Pittsburg.
Hopkins, Alfred J., Pittsburg.
Chalfont, Sidney A., Pittsburg.
Meek, Eloise, Johnstown.
Hoskins, Percy H., West Chester.
Cooper, Jesse R., New Castle.
McCartey, John R., Fredonia.
Marshall, Clifford, Sharon.
Purcell, Thomas, Erie.
Reeder, Miltoa T., Millersville.
Snodgrass, David G., Meadville.
Stewart, H., Gettysburg.
Sleppy, Roy E., Smicksburg.
Williams, J. A., McKees Rocks.
White, James K., New Brighton.
Wilson, Loyal W., New Castle.
Walter, John, Lebanon.
Wyant, William W., So. Sharon.

SOUTH DAKOTA.

Carpenter, Cora W., Sioux Falls.
Feige, E. W., Woonsocket.
Fisher, Edgar A., Bryant.
Germain, Wm. A., Sioux Falls.
Mertels, John Jos., Lebanon.
Nilsson, J. R., Terraville.
Torwick, Edw. E., Volga.
Taylor, Edw. B., Huron.

TENNESSEE.

Livermore, Geo. R., Memphis.
Bromberg, Perry, Nashville.
Burger, Thos. O., McMinnville.
Brouillette, Pierre L., Jackson.
Cooley, James T., Box.
Fuller, Jacob L., Gadsden.
Isham, Andrew J., Sevierville.
Lackey, William K., Ripley.
Miller, Jacob E., Rogersville.
Reed, E. A., Knoxville.
Swoope, Frank, Carthage.
White, E. H., Rives.
Walker, O. M., Munford.

TEXAS.

Austin, James L., Rockwall.
Boorman, Thos. G., Princeton.
Ball, John Houston, Crystal Falls.
Bradley, Benj. R., Hondo.
Burt, J. D., Farmersville.
Baldridge, W. H., Wylie.
Cash, Clarence M., Tuscola.
Corley, Sam, Clarksville.
Daly, T. J., Boyce.
Davis, Robert L., Princeton.
Denman, Peyton R., Lufkin.
Gibbs, A. Judson, Denison.
Hooks, James M., Paris.

UTAH.

Pearse, R. A., Brigham City.

VERMONT.

Reid, W. D., Barre.
Deziel, J. S., Barre.
Camp, C. F., Barre.
Stickney, O. G., Barre.
Sigouri, F. G., Barre.
Rich, F. A., Burlington.
Jenne, J. N., Burlington.
Aldrich, C. P., Brattleboro.
Bellerose, Alberic H., Rutland.
Bisbee, Arthur B., Montpelier.
Bates, George L., Morrisville.
Douglass, H. Edwin, Morrisville.
Grimes, Jesse R., Montpelier.
Hayes, G. L. T., Granteville.
Hartshorn, J. E., St. Johnsbury.
Morrison, Lawrie B., Burlington.
Ross, E. H., St. Johnsbury.
Shaw, Carlos A., Northfield.

VIRGINIA.

Payne, Marshall J., Staunton.

WASHINGTON.

Green, A. de Y., Tacoma.
Kidd, A. B., Seattle.
Manning, J. F., Everett.
Schumaker, D. A., Everett.
Watkins, I. R., Aberdeen.

WEST VIRGINIA.

Cure, Mortimer D., Weston.
Clarke, L. H., Kyle.
Dunlop, J. L., Red House Shoal.
Daniel, Sam A., Welch.
Ferguson, Wm. F., Marytown.
Hicks, Wesley D., Central City.
Halterman, Chas. W., Clarksburg.
Lawson, S. B., Logan.
Lewis, George E., Chester.
McGovern, A. M., Leopold.
McLain, William H., Wheeling.
Owen, B. A., Greenville.
Shanklin, Richard V., Gary.
Wright, Martin F., Burlington.
Williams, C. B., Philippi.

WISCONSIN.

Hogue, D. W., Darlington.

WYOMING.

Campbell, George F., Fort D. A. Russell.

The Public Service.

Army Changes.

Memorandum of changes of station and duties of medical officers, U. S. Army, week ending Oct. 1, 1904:

Gilchrist, H. L., asst.-surgeon, in addition to his other duties, will report in person to Col. Charles L. Heizmann, asst.-surgeon general, president of the faculty of the Army Medical School, for duty as instructor in hospital corps drill and first aid, vice Capt. Frederick P. Reynolds, asst.-surgeon, relieved.

Maus, Louis M., deputy surgeon general, granted thirty days' leave of absence.

Devereux, Thomas, asst.-surgeon, died in Manila, P. I., Sept. 24, 1904. Cause, acute general miliary tuberculosis.

Geddings, Edward F., asst.-surgeon, left Fort Keogh, Mont., on practice march.

Porter, Ralph S., asst.-surgeon, left Fort Niobrara, Neb., on practice march.

Kiersted, H. S., asst.-surgeon, left Fort Myer, Va., en route with battalion field artillery for duty during target practice at Mount Gretna, Pa.

Stephenson, Wm., surgeon, leave of absence extended twenty days.

Stiles, Henry S., asst.-surgeon, sick leave of absence further extended two months.

Gosman, Geo. H. R., asst.-surgeon, relieved from duty at Camp Geo. H. Thomas, Ga., and ordered to Fort Caswell, N. C.

Roberts, William, asst.-surgeon, relieved from duty at Fort Caswell, N. C., and ordered to Fort Hamilton, N. Y., for duty.

Fisher, Henry C., surgeon, granted twenty days' leave of absence.

Vedder, Edward B., asst.-surgeon, granted one month and fourteen days' sick leave.

Usher, F. M. C., asst.-surgeon, granted thirty days' leave of absence.

Chambers, William H., Sorber, Ord. M., Tignor, Edwin P., and Voorhies, Hugh C., contract dental surgeons, relieved from duty in the Departments of the Gulf, Texas, the Missouri and the East, respectively, and ordered to San Francisco for Philippine service.

Bell, Leonard P., Bade, Walter H., Guittard, Alwin M., and Hanson, Morris J., contract surgeons, arrived from the Philippines at San Francisco on the transport *Sherman*, to avail themselves of leave of absence granted at Manila.

Merrick, John N., contract surgeon, ordered to return to station at Fort Missoula, Mont., at the close of the tourist season in the Yellowstone National Park.

Wythe, Stephen, contract surgeon, granted leave of absence for two months from the transport *Buford*, with permission to apply for an extension of one month.

Mason, George L., contract dental surgeon, granted leave of absence for five days before reporting at Fort McPherson, Ga.

Kellogg, William V., contract surgeon, granted an extension of one month to his sick leave of absence.

Whitney, Walter, contract surgeon, relieved from further duty in the Philippine Division, and assigned to duty at Columbus Barracks, Ohio, at the expiration of his present leave of absence.

Carpenter, Alden, contract dental surgeon, returned to duty at Vancouver Barracks, Washington, September 24, from leave of absence.

Navy Changes.

Changes in the medical corps, U. S. Navy, for the week ending Oct. 1, 1904:

Lovering, P. A., medical inspector, commissioned medical inspector, with rank of commander, from June 9, 1903.

Backus, J. W., asst.-surgeon, ordered to the *Southery*.

Shiffert, H. O., asst.-surgeon, ordered to the *Franklin*.

McDonnell, W. N., asst.-surgeon, commissioned asst.-surgeon, with rank of lieutenant (junior grade) from Sept. 19, 1904.

Herndon, C. G., medical inspector, detached from the Naval Hospital, Yokohama, Japan, and ordered home to wait orders.

Percy, H. T., surgeon, detached from the *Iowa* and ordered to duty in charge of the Naval Hospital, Yokohama, Japan.

Dennis, J. B., surgeon, commissioned surgeon, with rank of lieutenant commander, from March 3, 1903.

Guest, M. S., surgeon, commissioned surgeon, with rank of lieutenant commander, from Jan. 31, 1903.

Peck, A. E., P. A. surgeon, commissioned P. A. surgeon, with rank of lieutenant, from March 27, 1903.

Judd, H. W., A. A. surgeon, detached from duty with the Marine detachment, Dry Tortugas, Fla., and ordered to the Naval Hospital, Washington, D. C., for treatment.

Bucher, W. H., surgeon, detached from the Naval Hospital, Yokohama, Japan, and ordered to the Naval Station, Olongapo, P. I.

Benton, F. L., P. A. surgeon, detached from the Naval Station, Olongapo, P. I., and to Naval Station, Cavite, P. I.

Bachmann, R. A., asst.-surgeon, detached from the *Supply* and ordered to the Naval Station, Cavite, P. I.

Wheeler, L. H., asst.-surgeon, detached from duty as recorder of the Naval and Medical Examining Boards, Washington, D. C., and ordered to duty at the Naval Museum of Hygiene and Medical School, Washington, D. C.

Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service, for the week ending Sept. 28, 1904:

Vaughan, G. T., asst.-surgeon general, granted leave of absence for fourteen days from October 18.

Bailhache, Preston H., surgeon, detailed as a member of a Revenue-Cutter Service retiring board to be convened in New York City.

Stoner, G. W., surgeon, leave of absence for eight days from Sept. 19, 1904, under Paragraph 189 of the Regulations.

von Ezdorf, R. H., P. A. surgeon, detailed to represent the Service at the meeting of the Association of Military Surgeons at St. Louis, October 10-15.

Kerr, J. W., P. A. surgeon, detailed as a member of a Revenue-Cutter Service retiring board to be convened in New York City.

Berry, T. D., asst.-surgeon, relieved from duty at Laredo, Texas, and directed to proceed to Stapleton, N. Y., and report to the medical officer in command for duty and assignment to quarters.

Bucker, W. C., asst.-surgeon, granted three days' extension of leave of absence from September 28.

Collins, G. L., asst.-surgeon, granted leave of absence for four days from Sept. 20, 1904, under Paragraph 191 of the Regulations.

Smith, F. C., asst.-surgeon, granted leave of absence for seven days from Sept. 24, 1904, under Paragraph 191 of the Regulations.

Ferguson, Bismarck, A. A. surgeon, granted leave of absence for twenty-one days from September 27.

Frary, T. C., A. A. surgeon, granted leave of absence for thirty days from October 1.

Goldsborough, B. W., A. A. surgeon, granted leave of absence for one day, September 29.

Gray, R. H., A. A. surgeon, granted leave of absence for seven days from October 2.

Hallett, E. B., A. A. surgeon, granted leave of absence for three days from September 24.

Light, S. D. W., A. A. surgeon, granted leave of absence for five days from October 9.

McMahon, R. L., A. A. surgeon, granted leave of absence for thirty days from November 5.

Marsh, W. H., A. A. surgeon, granted leave of absence for thirteen days from October 7.

Goodman, F. S., pharmacist, granted leave of absence for sixteen days from October 5.

Hall, L. P., pharmacist, to proceed to Norfolk, Va., for temporary duty.

Bierman, C. H., pharmacist, to proceed to Tampa Bay Quarantine, Florida, and report to medical officer in command for duty and assignment to quarters.

BOARD CONVENED.

Board convened to meet at Washington, D. C., Sept. 29, 1904, for the physical examination of an officer of the Revenue-Cutter Service. Detail for the board: Asst.-Surgeon-General G. T. Vaughan, chairman; Asst.-Surgeon A. J. McLaughlin, recorder.

RESIGNATION.

Siedenburg, Frank, pharmacist of the third class, resigned, to take effect Sept. 20, 1904.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon General, Public Health and Marine Hospital Service, during the week ended Sept. 30, 1904:

SMALLPOX—UNITED STATES.

Louisiana: New Orleans, Sept. 17-24, 5 cases (imported).
Massachusetts: Lawrence, Sept. 17-24, 1 case; Lowell, Sept. 10-24, 2 cases; North Adams, Sept. 20-27, 4 cases.
Michigan: At 42 localities, Sept. 10-17, present.
Minnesota: Sept. 12-19, Morrison Co., 1 case; Washington Co., 1 case.
Missouri: St. Louis, Sept. 17-24, 6 cases, 1 death.
New York: New York City, Sept. 17-24, 4 cases.
Pennsylvania: Titusville, Sept. 17-24, 1 case.
South Carolina: Camden, Sept. 17-24, 1 case.
Tennessee: Sept. 17-24, Memphis, 1 case; Nashville, 2 cases.
Wisconsin: Milwaukee, Sept. 17-24, 2 cases.

SMALLPOX—FOREIGN.

Austria: Prague, Sept. 3-10, 1 case.
Brazil: Rio de Janeiro, Aug. 7-28, 917 cases, 408 deaths.
China: Shanghai, Aug. 6-20, 4 deaths.
Great Britain: Sept. 3-17, Bristol, 2 cases; London, 3 cases; Nottingham, Sept. 3-10, 1 case.
India: Bombay, Aug. 23-30, 3 deaths; Calcutta, Aug. 20-27, 1 death.
Italy: Palermo, Sept. 3-10, 8 cases, 5 deaths.
Mexico: City of Mexico, Aug. 28-Sept. 4, 1 case.
Russia: Moscow, Aug. 27-Sept. 3, 5 cases, 2 deaths; St. Petersburg, Sept. 3-10, 2 cases.
Turkey: Alexandretta, Aug. 27-Sept. 3, 1 death; Beirut, Sept. 3-10, present; Constantinople, Sept. 4-11, 9 deaths.

YELLOW FEVER.

Brazil: Rio de Janeiro, Aug. 14-28, 2 cases, 1 death.
Ecuador: Guayaquil, Aug. 24-Sept. 7, 5 deaths.
Mexico: Coatzacoalcos, Sept. 11-18, 8 cases, 2 deaths; Sept. 11-17, Merida, 1 case; Tehuantepec, 2 cases, 1 death; Vera Cruz, Sept. 10-17, 1 case.

CHOLERA.

India: Bombay, Aug. 23-30, 39 deaths; Calcutta, Aug. 20-27, 4 deaths.
Turkey: Aug. 22, Bagdad, 127 cases, 105 deaths; Basra, 3 cases, 3 deaths; Bazian, 53 cases, 41 deaths; Hitt, 61 cases, 28 deaths; Mendelli, 27 cases, 10 deaths; Nasrie, 17 cases, 13 deaths.

PLAGUE—INSULAR.

Philippine Islands: Manila, July 23-30, 6 cases, 6 deaths.

PLAGUE—FOREIGN.

Africa: Cape Colony, Aug. 13-20, 1 case, 1 death.
Australia: Perth, July 29, 1 case; Sydney, July 31-Aug. 6, 1 case, 1 death.
Brazil: Bahia, Aug. 13-27, 10 deaths; Rio de Janeiro, Aug. 7-28, 21 cases, 8 deaths.
China: Fuchau, Aug. 8, epidemic.
Egypt: Aug. 20-27, Achmun (district), 2 cases; Alexandria, 3 cases.
India: Bombay, Aug. 23-30, 59 deaths; Calcutta, Aug. 20-27, 5 deaths; Karachi, Aug. 21-28, 3 cases, 3 deaths.
Japan: Formosa, Aug. 13-20, 12 cases, 8 deaths.

Society Proceedings.

COMING MEETINGS.

AMERICAN MEDICAL ASSOCIATION, Portland, Ore., July 11-14, 1905.

Tri-State Medical Society of Alabama, Georgia and Tennessee, Chattanooga, October 12-14.
Assn. of Military Surgeons of the U. S., St. Louis, October 10-15.
Mississippi Valley Medical Association, Cincinnati, October 11-13.
Vermont State Medical Society, Rutland, October 13-14.
New York State Medical Association, New York, October 17-20.
Medical Society of Virginia, Richmond, October 18-21.
American Confederation of Reciprocating Examining and Licensing Medical Boards, St. Louis, October 25.

CONGRESS OF ARTS AND SCIENCE.

Proceedings of the Medical Department, held at the Louisiana Purchase Exposition, St. Louis, Sept. 20-24, 1904.

The meetings of the medical department of the International Congress of Arts and Science, held at St. Louis, were well attended by representative medical men of all nations. The meetings were addressed by eminent authorities of international reputation, and the papers were listened to with great interest.

General Medicine.

The section of general medicine was presided over by Dr. William Osler of Johns Hopkins University, and the speakers announced were Dr. William T. Councilman of Harvard and Dr. Frank Billings of Rush Medical College, Chicago. Dr. Billings was unable to be present, but his paper will appear later in THE JOURNAL.

The Modern Conception and Methods of Medical Science.

DR. WILLIAM T. COUNCILMAN said that medicine progresses by two methods, namely, speculation and observation. He reviewed the progress of medical science and proved that the modern advancement in medicine has been due to observation of clinical material. He attributes its progress largely to the aid of other sciences and inventions. He said that the laboratory formed the basis for research work by offering methods of staining, culture media, chemical analysis, blood counts and *x*-ray examinations. He also said that surgery has been a distinct aid in the recognition of disease, and refers to animal and plant experimentation in the same capacity. Dr. Councilman made a plea for more comparative study of plant and animal disease to aid in diagnosis. He said also that the knowledge of infectious disease had advanced by the aid of the science of therapeutics, and that the obligation rests on the profession to co-operate with boards of health and aid in the medical education of the public.

Public Health.

The section of public health was presided over by Dr. Walter Wyman, surgeon-general of the United States Marine-Hospital Service. The speakers were Professor W. T. Sedgewick of the Massachusetts Institute of Technology, Dr. E. J. Lederle, New York City, and Dr. A. J. Reynolds of Chicago.

THE RELATION OF PUBLIC HEALTH SCIENCE TO OTHER SCIENCE.

PROFESSOR SEDGEWICK said that public health science was an outgrowth of the eighteenth century. Epidemiology by Sir George Baker, state sanitation and hygiene by an act of parliament, and personal hygiene by Jenner were the origin of the most important divisions of public health science. In 1854 an important advance was made by the discovery that water may be the ready vehicle of disease; then followed a study and investigation as to the cause and prevention of disease. Professor Sedgewick said that to Pettenkofer and his disciples in Germany and to Angus Smith in England is due the important advances in sanitary chemistry. The environment and its control is to-day one of the most inviting fields for work and education. The science of architecture, including the heating and ventilation of buildings, has been a great feature in public health science. Modern engineering has rendered to public health science a greater service than any other science except medicine. Most institutions of learning neglect the training of their pupils in public health science. The community looks to the medical profession for adequate legislation and administration of public health laws.

PUBLIC HEALTH—ITS PRESENT PROBLEMS.

DR. LEDERLE'S paper was read by proxy. It stated that one of the most important problems which confronts us is the relation of legislation and administration to public health science. We have no national public health officers. Our boards must be co-ordinated and made a part of a national board of health. Public opinion will be responsible for this progress, still the appointment of public health officers must not be controlled by politicians. Scientific men are needed at the head of our health departments. Scientific men, however, can not work for the small fees now paid. We must not depend on the medical profession alone, but must have a class of educated sanitarians. The prevention of the spread of infection will always belong to public health problems, hence we must have provision for public laboratories. These laboratories should be put under national authority so that serum can be obtained at a lower cost and well distributed, and research work be carried on for the good of the community. Better isolation hospitals should be established. It is also a fact that hospitals for tuberculosis can be maintained much cheaper than allowing the spread of disease in the community. Laws governing spitting, public noises, and offensive trades should be more vigorously carried out. A national sanitary body would control the water and milk supply, prevent the adulteration of food, control the sale of patent medicines and restrict the sale of drugs to graduate pharmacists.

REDUCTION OF TIME BETWEEN THE PRODUCTION OF MILK AND ITS CONSUMPTION.

DR. ARTHUR R. REYNOLDS, Chicago, said that while state laws and city ordinances prescribe all manner of requirements for dairies, cows and the constituents of milk and cream offered for sale, nothing is said of the age of the milk. He laid stress on the fact that milk 12 hours old is worth very much more from a dietetic standpoint than milk 24 hours old, while milk 36 hours old is not only of little food value, but is positively harmful to infants. Dr. Reynolds went on to say that old milk not only starves young children, but is an inducing cause of diarrhea and "summer complaint," and causes the excessive infant mortality during the hot weather.

Pediatrics.

This department was presided over by Dr. T. M. Rotch of Harvard University. The first speaker was Professor T. Escherich of the University of Vienna.

RELATION OF PEDIATRICS TO OTHER SCIENCES.

DR. A. JACOBI, Columbia University, New York, spoke on this subject. The first part of his paper dealt with the history of pediatrics. Dr. Jacobi emphasized the importance of hereditary influence, and the care of the mother to the termination of intrauterine life. He said that the mortality of infants is greatest in the first year because the functions which exist for the protection of life are not fully developed, and that the solution of the problem of lowering the mortality is intimately connected with the regulation of labor laws, marriage licenses, factories, etc. Dr. Jacobi made a plea to keep working, and said that a life spent in the service of mankind is well spent.

Ten-minute addresses were made by each of the following named physicians: Drs. W. P. Northrup, New York City, E. W. Saunders, St. Louis, and John L. Morse, Boston.

Therapeutics and Pharmacology.

This section was presided over by Dr. Hobart A. Hare of Jefferson Medical College.

RELATION OF THERAPEUTICS TO OTHER SCIENCES.

PROF. OSCAR LIEBREICH of the University of Berlin said that the evolution of therapeutics has been influenced by the scientific advances of the last century, that various drugs and their physiologic action in specific cases have been proven, and chemical changes within the body depend on individual cells. He also said that the difference of chemical action within and without the body affords a fertile field of observation and that the numerous discoveries in the nineteenth century prove that we are making as rapid advances in therapeutics as in other sciences.

THE PROBLEMS OF THERAPEUTICS.

SIR LAUDER BRUNTON, F.R.S. of London, said that the object of therapeutics is first to relieve pain, and second to be able to restore health, and that therapeutics might be called an art. He said that our success with drugs depends on the practical power of recognizing symptoms and the art or skill of administering a remedy. It has been the custom to continue to use certain drugs simply because they have been used with success in the past; now we use drugs for a specific purpose. One of the aims of therapeutics is to defend the body from microbes and to apply drugs that will kill them. The art of therapeutics consists in the discovery and administration of drugs that will not only destroy organisms but produce the least destruction to body cells. Serums which will render the patient immune against bacteria without injury to the body are demanded. He also said that the highest aim of therapeutics is to relieve pain and restore health without altering the natural conditions or environments of individual cells.

Ten-minute addresses were made by the following-named physicians: Dr. G. P. Coromilis, Athens; Dr. Henry Laguer, Berlin; Dr. Hunt, Baltimore; Dr. G. A. Matthews, Chicago.

PREVENTIVE MEDICINE.

This section was presided over by Dr. J. M. Mathews, Louisville, Ky. The chief speaker was Prof. Donald Ross., F.R.S., Liverpool School of Tropical Medicine, whose paper entitled "A Logical Basis of a Sanitary Policy for the Prevention of Mosquitoes," was illustrated by means of blackboard diagrams.

Short addresses were made by Drs. W. H. Welch, Baltimore; George Dock, Ann Arbor, and Frank Jones, Memphis, Tenn.

Neurology.

This section was presided over by Dr. L. F. Barker of the University of Chicago.

The first speaker was Professor Kitasato of the University of Tokio, whose paper covered the subject of leprosy.

The second speaker was Prof. J. J. Putman of Harvard, who read a paper on hysteria, epilepsy, and other nervous diseases.

Psychiatry.

This section was presided over by Dr. William A. White of the Government Hospital for the Insane, Washington, D. C.

DR. C. L. DANA, Cornell University, read a paper on the "Relation of Psychiatry to Other Sciences."

DR. E. COWLES, Boston, discussed the importance of mental pathology and physiology and defined the terms neurosis and psychosis.

Pathology.

This section was presided over by Prof. Simon Flexner, director of the Rockefeller Institute for Medical Research.

The first speaker was Prof. Ludvig Hektoen of the University of Chicago. He stated that during the period since 1850 and with the perfection of the microscope, pathology had made greater advance than in all preceding time, and that all the sciences were shedding more light and aiding pathology in its modern advances.

PROF. JOHANNES ORTH of the University of Berlin, read a paper entitled "Pathology and Its Relation to Other Sciences." Professor Kitasato of the University of Tokio also made a short address.

DR. RONALD ROSS, F.R.S., of Liverpool, gave an interesting talk on the life cycle of the malaria parasite in the stomach of the mosquito illustrated by stereopticon views.

Surgery.

This section was presided over by Dr. Carl Beck of the Post-Graduate Medical School, New York. The first speaker was Dr. F. S. Dennis, F.R.C.S., of Cornell Medical School, whose paper was a review of the surgery of the past 100 years. Dr. Beck discussed the advance of surgery in this country with special reference to anesthesia, which has made the extensive practice of surgery possible.

Internal Medicine.

This section was presided over by Dr. F. C. Shattuck of Harvard.

RELATION OF MEDICINE TO SURGERY.

PROF. T. C. ALLBUTT, F.R.S., of the University of Cambridge, gave a history of medicine and surgery from the earliest days to the present time, and showed how medicine and surgery had made progress hand in hand. He believed that the sciences were interdependent and that advance in one would open new fields in the other.

DEVELOPMENT OF MEDICAL SCIENCE DURING THE LAST CENTURY.

DR. W. S. THAYER of Johns Hopkins University said that to recognize, to prevent, to heal, are the objects of medical sciences. After the clouds of tradition had cleared away the advance of medical science became possible. Science swept aside the dogmatism of the older schools. Methods now form the basis of diagnosis. The training of the modern physician requires years of work by the bedside and a broader and better knowledge of all methods for the recognition of disease. The hearty co-operation of hospitals and clinics will enable the student to gain proper knowledge. It is the duty of the profession to see that their clinical methods keep pace with scientific research.

Ten-minute papers were read by the following: Prof. Paul Courmont, Lyons, France; Prof. F. G. Novy, University of Michigan, and Dr. Henry Sewall, Denver.

Gynecology.

This section was presided over by Dr. Howard Kelly of Johns Hopkins University. The first speaker was Dr. J. C. Webster of Rush Medical College.

IMPORTANCE OF AN EARLY DIAGNOSIS IN CANCER OF THE UTERUS.

DR. J. N. SAMPSON, Baltimore, said that cancer of the uterus can be cured if operated on in its incipiency. To lessen the list of fatal cases, we demand early diagnosis and an increase in the percentage of operative cases. Hysterectomy does not suffice because of perimetrial metastasis to the lymph nodes or lymph spaces in many cases. He said that a careful study of the condition of the patient as to operative interference is necessary, and that it is necessary to impress the profession, and through them the laity, with the fact that cancer of the uterus, if observed in time, can be cured and that bleeding in some form is usually the earliest symptom.

This paper was discussed by Dr. George Gellhorn, St. Louis, Mo.; Dr. H. Ehrenfest, Dr. F. T. Taussig and Dr. C. H. Powell of St. Louis.

It was moved and seconded that a committee be appointed to investigate carcinoma of the uterus for the purpose of helping the profession and enlightenment of the people at large, and their report be presented at the next national medical meeting.

Dr. Sampson, Baltimore; Dr. F. T. Taussig, St. Louis, and Dr. Clark, Philadelphia, were appointed on this committee.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Seventeenth Annual Meeting, held at St. Louis, Sept. 13-16, 1904.

(*Concluded from page 1000.*)

Some Clinical Reasons for Advising Early Operations in Cases of Fibroid Tumor of the Uterus.

DR. RUFUS B. HALL, Cincinnati, discussed this subject under three heads: 1. Which cases should we advise not to be operated? 2. In which cases should we advise later operation? 3. In which cases should we advise early operation? He discussed at some length the clinical history of patients in order to form a correct conclusion. 1. If a patient between 35 and 38 years of age, suffering from a fibroid tumor of the uterus, the tumor and uterus combined making a mass not larger than a cocoanut, had no symptoms other than profuse metrorrhagia, the whole period not extending over five or six days, and she was free from pain except at her menstrual periods, it would be wise and judicious not to interfere surgically. But this patient, during her entire menstrual life, should be considered an invalid by her physician and should report to him at once if her symptoms became aggravated. 2. If she suffered pain in one or both iliac regions at other times than at her menstrual periods, the cause of the pain should be discovered at once and corrected. On the contrary, if her menstrual period was prolonged to ten or twelve days, the loss of blood amounting almost to a hemorrhage, and this hemorrhage could not be controlled or mitigated by the usual internal medication and rest during the period, the advisability of an operation should be considered. 3. Prolonged and severe uterine hemorrhage had not been considered a sufficient reason for advising an operation. A patient suffering from a tumor as large or larger than a cocoanut, who had profuse bleeding at each menstrual period and the period was prolonged for eight, ten or fifteen days, as frequently happened, was in considerable danger. It was his experience that a large majority of those patients in whom the hemorrhage could not be controlled by medicinal remedies in two weeks, came to operation sooner or later. They could frequently stand off the operation two or three weeks, or in some

instances longer, but the anemia was profound, and if some complication arose in the tumor, ovaries or tubes, making an immediate operation necessary, they were in the worst possible condition for it. The chances for a successful operation were greatly diminished. Therefore, when the hemorrhage could not be controlled within a few months, these patients should be advised to have the operation made before the anemia was pronounced. These symptoms, however, were not of so much importance as others, but if permitted to continue for many months they caused profound anemia and lowered vitality, and a high mortality followed the operation.

He regarded hematoma, complicating these tumors, as the gravest complication the surgeon had to deal with in the management of the late cases. His records showed that only one patient in seven operated on for fibroid tumors, where pus tubes were present, developed peritonitis after the operation; while five in every six of those operated on in which hematoma of the ovary existed, suffered from peritonitis following the operation for removal of the tumor. His experience in removing these malignant fibroid tumors had been that within a year or two after the operation for removal of the tumor the patient had a recurrence of malignant disease in the pelvis and abdomen and succumbed within a few months.

Shall We Remove All Fibromata of the Uterus on Diagnosis?

DR. THOMAS B. EASTMAN, Indianapolis, stated that in the 117 cases on which he had operated for fibroid tumor of the uterus, complications which bade fair to result eventually in death were encountered in 43 cases. Hydrosalpinx, either unilateral or bilateral, five times; suppurating dermoid cyst, three times; sarcoma, once; parovarian cyst, once; necrosis of tumor, eight times; cystic degeneration of ovaries, three times; ovarian cyst, four times; intraligamentous development of fibroid, three times; pyosalpinx or salpingitis, seven times; hematosalpinx, once; cystic degeneration of the tumor, once; myxomatous degeneration, three times; adenocarcinoma of the body of the uterus, twice. Among the more prominent complications, appendicitis was encountered once. In addition to the complications inherent in the uterus and its adnexa proper, there were those arising from the pressure of the mass on the bladder, rectum, ureters, and the persistent anemia resulting from prolonged hemorrhages.

In his forty-three complicated cases it was a significant fact that those complications which were inherent in the tumor and which presaged the most certainly fatal results, were those of such character as to preclude a positive knowledge or ofttimes even a suspicion of their existence prior to operation or even a microscopic examination. So far as the danger was concerned, the removal of a fibroma was attended with as little danger as the average abdominal section. The results obtained by various operators warranted one in classing it among the safe operations, the mortality in the hands of skilled men being scarcely more than 5 per cent., a mortality certainly much less than would result from the policy of procrastination, which advocated delay until the forces of death plus those of the operation outweighed those of surgical interference. When one considered the dangerous conditions into which an innocent fibroid might quickly change itself, and the ease and safety to the patient with which it might be removed, he believed that the deduction was evident that all fibroid tumors of the uterus should be removed on diagnosis.

Removal of Skeleton of Ectopic Fetus Ulcerating into Bladder, by Vaginal Cystotomy.

DR. WILLIAM D. HAGGARD, Nashville, Tenn., reported the case of a white woman, aged 31, the mother of two children, who presumed herself to be normally pregnant and expected to be confined August 30, 1900. There was a continuous flow from the uterus for the first three months, and she had pain in the bladder and straining on micturition from the beginning of conception; but there was no history of rupture of the ectopic gestation. On June 20, at six and a half months, while lying down she felt motion for the last time. Previously it had been unusually vigorous, more so than with her two other children. She was confined to her bed for three or four weeks with pain. She had more or less pain for about a year, and she was a semi-invalid from weakness, pain and tenderness in lower abdomen. The enlargement of the abdomen had gradually, but appreciably, diminished. At the end of a year pus first made its appearance in the urine, and the first day after getting up, a bone, which was a fetal vertebra, made its exit through the urethra. During the second year she had been able to attend to all household duties, but occasionally would have several days of unusual bladder irritation, and pass a bone through the urethra. In the last four months she had passed all the long bones. Sometimes one would catch in the urethra. She would get hold of the free end and gradually pull it out. Commonly several days of comparative comfort would elapse before another one would set up irritation, and finally escape. In this way she passed eighty-five bones. Six weeks before admission to the infirmary she felt the discomfort of another bone and had not been free from it since nor had any bone passed. She had been in bed two weeks with pain in the lower abdomen, which was very intense on motion. Upon examination the bladder was exquisitely tender. She described a small lump to the right of the median line and low down the remains of the once six and a half months' enlargement, but this could not be made out on account of tenderness. The urine was loaded with pus and phosphates, and exceedingly offensive. Curiously enough, the woman did not void it oftener than every six or eight hours. Micturition was very painful, and after the urine was voided free pus was often expressed. Under ether, Oct. 31, 1902, the index finger was made to enter the urethra without much effort, and detected numerous bones, and communicating with the bladder, an opening into a lesser chamber on its right upper surface. There was a mass on the right to be made out bimanually about the size of a small orange, and communicating with the bladder much as a bow window with partially drawn curtains did with a room. The uterus was retroverted and not much enlarged. The bones were much too large to be removed through the urethra, and an incision was made into the vesico-vaginal septum. The finger in the bladder, through the urethra, located the bone, and it was withdrawn with a forceps introduced through the incision. In this way fifty-two bones were removed. Some were embedded in granulation tissue in the remains of the ectopic sac, and were with difficulty removed. The sac and bladder were freely irrigated, and an artificial vesico-vaginal fistula established for drainage, after Emmet's method of sewing the vaginal mucosa to that of the bladder by silver wire sutures. The operation, while tedious, was not attended with shock. The bladder was irrigated twice daily afterward with boric acid solution, and the urine soon became normal. At the end of six weeks the artificial vesico-vaginal fistula was closed successfully by silver wire sutures. A cystoscopic examination with the Bransford Lewis ureter-cystoscope revealed a healthy mucosa, and at the site of the former communication only a slight reddish depression was seen. The ureteral catheter failed to disclose any depth to this aperture, and the patient was discharged cured eight weeks after the operation.

President's Address.

DR. WALTER B. DORSETT, St. Louis, president of the association, considered the various operations for the relief of retrodeviation of the uterus. He spoke of the excellent operative work which had been accomplished within the past few years, so that what he had to say was more of a résumé of what had been done surgically. He discussed the methods of operation, saying that the different plans of accomplishing the reposition of the uterus might be classified according to the route selected by the advocates of each. They might be divided into extraperitoneal, vaginal and intra-abdominal. After considering and discussing exhaustively the different methods in vogue and indulging in some criticism of them, he stated that some of the methods did not merit the prominence they had obtained in the estimation of the profession at large, and for the reason that no one could arrive at a proper conclusion as to the best method of relieving the suffering woman without a careful study of the different methods. If one operation was

in accord with the accepted idea of proper surgical technic, the other certainly was not. When one considered the great diversity of opinion as to which was right and which was not, without a proper appreciation of them all, one was certainly at a loss as to the choice of operations. In his opinion one should not consider any operation that did not contemplate the possibility of a thorough inspection of the adnexa from above the pubic bone. He would discard the entire class of operations that contemplated vaginal incision, either anteriorly or posteriorly, on account of the greater liability of sepsis as well as from the impossibility of anchorage to firm structures. While ventrosuspensions and ventrofixations had been condemned as unjustifiable, it was because only the fixation or suspension accomplished by anteverting the uterus and stitching the fundus, or the posterior uterine wall to the abdominal wall, had been considered. It was reasonable to assume that this unnatural suspension or fixation was a causative factor in the production of lengthened adhesion bands for the entanglement of bowel as well as a barrier to the proper development of the pregnant uterus. If, however, a lower segment of the anterior uterine wall was attached lower down on the abdominal wall, and omentum was allowed to drop to or behind the uterine fundus, the bugbears of necessary cesarean sections in labor cases and entangled bowel would be less feared. His own work in obstetrics and with this operation justified him in this statement.

Gunshot Wound of the Hip Joint.

Dr. L. H. Laidley, St. Louis, reported a case of gunshot wound of the hip joint, but before doing so referred to the literature of the subject. The patient, aged 18, a visitor of remarkably vigorous constitution and unexceptional health, was shot in a brawl on "The Pike" at the Exposition on the 18th of June. He was admitted to the Emergency Hospital and within one hour an abdominal section was made. On examination it was found that the ball had passed through the abdominal wall near McBurney's point, passing inward and slightly downward. On examining the viscera it was found that the ball had penetrated the cecum, making two openings, passing down into the soft parts and into the pelvis. These were closed by Lembert sutures, the abdomen cleansed of large quantities of blood and escaping contents of the bowel, and closed with through-and-through sutures. The patient left the table within an hour under very favorable circumstances, the pulse being 72, temperature normal. The next morning he complained of great pain in the hip joint, and was unable to move that limb. For ten days his condition was favorable, when he gave evidence of disturbance, especially about the joint. Chills and fever and increased pain suggested an examination with the *x*-ray, which would have been used earlier were it not for the fact that they had not been provided with such an appliance up to that time. On July 11, after the bullet was removed, an incision was made over the joint, disclosing the presence of pus outside of the joint, which was opened, showing that all of the head of the bone within the capsule was entirely destroyed and fractured; the acetabulum was fractured and necrosed; following up the course of the cavity made by the bullet, the missile was removed. It was lodged in the upper and outer margin of the cavity of the socket. The necrosed portions of the bone were chiseled out and the dead portion of the head of the femur removed, the cavity was curetted, packed with gauze and thoroughly drained. The patient afterward showed evidences of sepsis, which prompted him on July 22 to reopen the wound, wash out the cavity and introduce further drains. Later the patient manifested evidence of acute nephritis, and on examination it was found that he had a large quantity of albumin, with casts, evidently due to toxemia. Since that time, by repeated cleansing of the cavity and thorough drainage, these evidences were disappearing, leaving the patient in a fair condition for recovery. The subsequent treatment would be to free the cavity and its surrounding structures of all suppuration, and by this means he hoped to restore his patient to normal health, probably leaving him with a shortening of the limb and perchance a degree of ankylosis. The patient was exhibited.

Strangulated Umbilical Hernia.

Dr. John Young Brown, St. Louis, reported an interesting case of complicated strangulated umbilical hernia, and presented the patient.

Sterility Due to Retrodeviation of the Uterus and Its Treatment.

Dr. Herman E. Hayd, Buffalo, N. Y., reported twelve pregnancies following the simple Alexander operation. Among other things, he stated that posterior displacements of the uterus were a very frequent cause of sterility. Pregnancy had frequently followed when such a uterus was placed in position, either by pessary or operative measures. He made an eloquent plea for the simple Alexander operation for a large class of suffering women who had simple uncomplicated retroposed uteri. In reporting the twelve cases in which pregnancy followed the simple Alexander operation, it was pointed out that the ligaments had stood the test of pregnancy and parturition. The canal was never opened *per se;* the internal ring and peritoneal cavity under no circumstances whatsoever. He made a plea that the simple Alexander operation be always employed for this special class of sufferers in whom a pessary was not worn with comfort nor willingly tolerated.

Circumscribed Infection of the Placenta.

Dr. Albert Goldspohn, Chicago, reported this case. There was a first pregnancy of from three to four months' duration, with severe nausea, and much vomiting almost from the beginning, with the gradual additional development of fever, and finally severe chills and a scanty, foul discharge. There was no alteration in the shape and consistency of the cervix, or of the body of the pregnant uterus. The patient had a rapid pulse, and irregular, high temperature, and chills. The uterus was emptied. The membranes and ovum were intact. The edge of the placenta bore a circumscribed area of broken-down gelatinous tissue, with a very offensive odor.

He gave a brief review of the current views of the pathology of hyperemesis gravidarum and considered the rare etiologic bearing of the above case.

Conservation of the Natural Resistance of the Patient in Surgical Work.

Dr. Robert T. Morris, New York City, in discussing this subject said that the late Lawson Tait was the first great exponent for conservation of the natural resisting force of the patient. Tait operated very quickly. He did as little as possible. He avoided handling viscera: he avoided disturbing the patient's mind with details of what he was about to do. He treated the most difficult cases lightly and patients looked at it in the same light. The repair of surgical injury depended primarily, secondarily and finally on a proper hyperleucocytosis. He used this term in a generic way to avoid elaboration of detail in statement. This was a manufacturing process carried on under the control and guidance of the sympathetic ganglia. The more the surgeon shocked a patient the more he lessened the production of the leucocytes. The common ways of lessening the natural resistance of the patient were prolonged anesthesia and an unnecessary amount of anesthetic. All surgeons had seen patients who had been literally drenched with ether; they had seen patients carried to the danger line with chloroform. On the other hand, surgeons had watched the beautiful work of men who were expert in giving anesthetics, who began with nitrous oxid and a little oxygen, then changing to ether, who did it skillfully, quickly, nicely, and avoided shock, which took away one element of resistance from the patient. Quick work was a point in which Tait excelled. Expeditious work conserved the natural resistance of the patient. Undoubtedly the resistance of patients was lessened in abdominal surgery with gauze packing. He said that if ten healthy policemen were taken from the street and a yard of gauze was introduced into the peritoneal cavity those policemen the next day would not be in good condition. This being so, how could one expect a patient with septic appendicitis to be in good condition if a yard of gauze was packed into his abdomen. If one drained quickly, got out of the abdomen quickly, disturbed the bowels as little as

possible, made short incisions—in other words, leaving the patient alone as nearly as possible, he would make such a wonderful recovery that one might be accused of taking out a normal appendix. The tendency was to do much.

If a surgeon pricked his finger in operating on a septic case, the surgeon died, while the patient recovered. Why was this? The patient was loaded with bacteria and toxins. The patient had called out all of his resistance factors; his hyperleucocytosis was under way ready to meet infection and bacteria. The surgeon had not called out his resisting factors, hence the bacteria proliferated rapidly and gained ascendancy. Was it necessary for the surgeon to get all of the septic culture media out of the patient's abdomen? No. All he needed to do was to turn the scale; there was a conflict between the bacteria and the leucocytes in that patient's case; the bacteria were winning; the leucocytes were losing. What did the surgeon do? By taking out most of the toxins and bacteria quickly, he turned the scale, turned the balance in favor of the leucocytes, and they went on and won. He took unfair advantage of them, but if he had labored conscientiously in accordance with text-books, and the best authorities, he would have put the patient out of commission where he could not have done it.

Travel Notes.

XI.

NEW ZEALAND.

THE OCEAN VOYAGE—CLIMATE—NATIVES—AUCKLAND—AUCKLAND HOSPITAL—MEDICAL PROFESSION.

NICHOLAS SENN, M.D.
CHICAGO.

SYDNEY, AUSTRALIA, July 30, 1904.

The American has become during the last twenty-five years an enthusiastic traveler, and the increasing prosperity in our country will only tend to increase his desire to see the outside world and familiarize himself with the greatest of all subjects—man—his customs and habits in various parts of the globe, as well as the conditions, climatic and otherwise, which influence his physical and mental characteristics. The observing traveler will have become aware that

> "Men's characters and habits are not influenced so much by the peculiarities of family and race as by the physical features of their native land and their mode of life—things by which we are supported and by which we live."—Cicero.

The people of the United States spend annually $160,000,000 in touring the old world; very few, indeed, direct their steps westward, and we as a nation know very little of New Zealand, the land of geysers, mountains, glaciers, fjörds, and the Maoris, of the great continent of Australia, its strange animals, trees and flowers, its vast plains, impenetrable forests, and the home of one of the most primitive of all races. The American globe trotter usually selects the Japanese route. For a summer trip the Australian route is decidedly the best.

VOYAGE FROM SAN FRANCISCO TO NEW ZEALAND.

The southwestern part of the world, New Zealand and Australia, are now readily accessible to the traveler by the establishment of a regular steamer service. The three sister ships of the Oceanic Steamship Company, the *Sierra*, *Sonoma* and *Ventura*, modern 6,000-horse power steamers, make the trip regularly every three weeks. The table is excellent and the service faultless. The distance from San Francisco to Auckland is nearly 6,000 miles, and the time to cover it 17 days. The monotony of the voyage is broken by making stops at Honolulu and Pago Pago long enough for the passengers to get a good glimpse of the tropics, their inhabitants, animal life and products of the soil. Between these places is the desert ocean, and the passenger who does not know how to improve his time profitably might be tempted to complain of

> "The burden of the desert of the sea."—Isaiah xxi, 1.

We never saw a sail or puff of smoke on the whole voyage, except in the harbors. The interested traveler has, however, enough to see and observe. The endless, trackless waste of the ocean in itself is something wonderful to contemplate, in its various moods of peace and rest, anger and storms. The glorious sunsets paint picturesque sky, sea and clouds that delight the eye of the most unappreciative of the wonders of Nature. The starlit sky and the silvery moon enlighten the evenings and shorten the long nights in the tropics. One day out from Honolulu the sun crossed our ship, and two days before we reached Auckland the full moon, from its lofty position, smiled directly down on the very tips of its masts. The great crest-covered furrows ploughed by the ship on each side reminded one of the speed with which we move on, and at night hypnotize and delight the sense of sight by their phosphorescent illumination in the form of myriads of diamonds, which come and disappear in the twinkle of the eye. The animals encountered in the South Pacific are few, hence more eagerly looked for. That daring, tireless mariner, the sea-gull, followed the wake of the ship nearly the entire distance. Brown and white, large and small, these graceful flyers circled in the air, with little effort on their part, coming and going by simply spreading their wings, their sharp eyes fixed on the turbulent water whipped into a diminutive storm by the revolving screw, patiently waiting for their time to feed on the refuse of kitchen and table, and the moment it appeared in the agitated waters, with unerring aim would dash from their height with the speed of an arrow, grasp and greedily devour the cherished morsel. The flying fish, single, in pairs, or in schools of many, when the sea is quiet, frightened by the approach of the ship would dash from their briny element into the air and make their short flights in gentle curves, striking the water at a distance of about thirty yards, rebound and make one or two other flights, finally to disappear with a splash from whence they came. With these things around and about you and useful books to read, the longest sea voyage is stripped of its monotony. From Honolulu to Samoa the average temperature in the cabins on the port side of the ship was 80 to 82 F. At one time my thermometer registered 100 F. in the sun. The southwest wind was constant. In less than four hours after leaving Samoa a cold breeze set in which forced the passengers to lay aside the white suits and rummage their trunks for clothing of a more somber color and heavy underwear. That evening blankets were in demand, and next day those not used to a colder climate paced the deck in fur and overcoat. This sudden change in the temperature reminded us that we were approaching a part of the world where the seasons are the reverse of ours.

From now on the sea became rough, which, combined with a heavy wind and drizzling rain, soon cleared the decks. At noon, July 26, we passed several barren islands, and soon the rugged, hilly, almost treeless coast of New Zealand was sighted, and at 2 o'clock we reached the wharf of Auckland. The harbor of Auckland is one of the finest in the world. All the navies of the world would find here ample room, not only as a place of safety, but enough space in which to maneuver.

CLIMATE.

We found New Zealand in the grasp of midwinter, however not with ice or snow, not even frost. The grass had lost its emerald green, and trees with deciduous leaves were about the only reminders of the New Zealand winter. Many of the garden flowers, roses and violets, were in full bloom, and the grassy slopes of Mt. Eden were checkered with a little white flower that peeped through the low grass, anxious to inform the visitor that it had survived the rigors of the sub-tropic winter.

The snowclad mountains and the extent of the island in a line from south to north, give to the New Zealander a wide range of choice climate. On the whole, the climate is mild, equable and agreeable, extremes of cold and heat are unknown. The perpetual snow line is 7,500 feet above the lever of the sea. The great forests in the southern part of the islands secure an adequate rainfall throughout the year. During the summer months, from October or November to April or May, the weather is as nearly perfect as can be

found anywhere—days of light sunshine, with pleasant breezes and cool nights. Mt. Cook, 13,349 feet, is the highest of the many mountain peaks.

NATIVES.

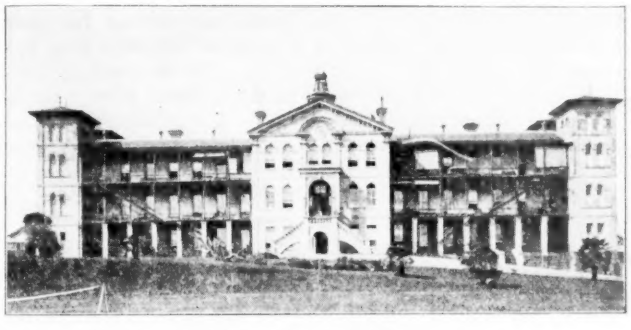
The natives of New Zealand are the Maori, a chivalrous, proud, noble race. They are Polynesians of the same origin as the inhabitants of all the islands of the South Sea. Their physical and mental characteristics have, however, undergone marked changes since they made their first appearance in New Zealand. Tasman, who discovered the islands in 1642, but did not land, and Captain Cook, who visited them several times between 1769 and 1777, found them densely populated at that time, and until subdued by the British they were hardy, war-loving people.

War was a passion with them, but their greatest national characteristic was their love of the land. "Let us die for the land" was their war cry that resounded through all the ages of their possession. Civilization has made them law-abiding citizens of the colonial government and loyal to the king, as was shown during the South African war, when many of them expressed a strong desire to join the British forces. The men are tall, powerful, square, with a brown skin, jet-black eyes, scanty beard, straight or slightly curly hair, with an open, frank countenance. The women are well built, with copious hair, worn in flowing tresses or pompadours, and many of them with handsome features when young. There are about 20 per cent. more males than females. The climate of New Zealand has made its impression on this race. They had to protect themselves against cold by clothing and closed habitations.

The New Zealand flax or hemp (*Phormium tenax*), a liliaceous plant, from the leaves of which the fibers are obtained, are from 3 to 9 feet long and from 2 to 3 inches broad, furnished them with material for the texture of their garments, as well as the feathers of birds and the skin of fur-bearing animals. The scarcity of tropical fruits and starch-yielding tubers made the struggle for life more difficult than in the more favored islands of the South Pacific, something which could not fail in improving their physical condition, and in developing their mentality. The Maoris have a taste for art, as is amply shown by their rude wood carvings and the architecture of their houses. Tattooing was formerly extensively practiced, but the operation is performed in an entirely different manner than in Samoa and Tahiti. As the natives have always worn clothes of some kind they select the face, the most exposed part of the body, for the tattooing. The chiefs undergo the most elaborate process of the tattooer's art. With a sharp shell lines and scrolls are cut in the superficial parts of the skin, always radiating from the nose, and into these scratches the pigment is rubbed and permanently deposited. The women only tattoo the lower lip and chin in straight lines. Christianity has taken the place of Paganism, but is not held with much fervor by the people. Pagan customs and superstition remain. Some Maoris have taken to farming and the professions, but the bulk of the race is living in dull idleness, depending on the liberal government for their support. The young people realize the advantages of an education, and are profiting by the schools located in all of the settlements, as in it they see the only means that will prevent complete extinction of their race. Like all Polynesians, the Maoris have brought their tribute to the altar of civilization. The acute infectious diseases, syphilis and tuberculosis, brought to their islands by the whites, have reduced the population numbering hundreds of thousands, to something like 40,000. In 1891 the native population numbered 43,642, of whom 2,119 were half-castes. In 1896 the total population of New Zealand was 743,214, of whom 39,854 were Maoris and half-castes. Improved sanitary measures and a better appreciation of hygiene by the natives have contributed much in diminishing the mortality among the natives, and will, it is to be hoped, prevent the extinction of this noble race.

THE CITY OF AUCKLAND.

From the harbor the city of Auckland, with its over 60,000 inhabitants, presents a charming sight. It is spread out over a large surface encircling the capacious harbor and perched on many hills. The two-story houses and cottages are built of brick or wood, and many of the business houses in Queen Street, the main thoroughfare, are solid structures of stone or brick and cement. Most of the streets have asphalt pavements, and are kept scrupulously clean. The electric lighting and tramway conveniences compare well with any of our modern lively western cities. The many churches, excellent schools, capacious hospital, museum and public library speak well for the intellectual life of the island city. The drive to Mt. Eden, with its bowl-shaped extinct crater, within the limits of the city, is one of great scenic beauty. I made this tour in company with Dr. Lewis in his automobile. I noticed when we made a short stop at the foot of the mountain that Dr. Lewis and his coachman held a short consultation, the significance of which I did not understand at the time. Dr. Lewis steered the French machine. The ascent was slow, and when we came to a few yards of steep grade the coachman lent aid to the quivering vehicle by a vigorous *vis-a-tergo* until this obstacle was overcome, when the rest of the ascent was made without any further difficulty. When we reached the summit the doctor and coachman shook hands, and the former said in a triumphant tone, "I told you so." It seems that there had been some misgivings concerning the possibility of accomplishing this feat, as the doctor had never attempted it before. His faith in the power of his machine had been vindicated. The view from the summit of the mountain is inspiring. The dizzy depth of the crater and the panorama all around leave deep and permanent impressions on the memory of the astonished tourist; the sight of the first is awe inspiring, the contempla-



Auckland Hospital.

tion of the surrounding scenery pleasing and full of surprises. From the summit twenty other extinct craters can be seen, and the wide expanse of the Pacific on both sides. The well-painted wooden houses and the pale red brick houses, with their silvery roofs of corrugated iron, and the harbor, with its vessels, looked like a toy city made for the amusement and instruction of children. Eucalyptus and pine trees, the lovely gardens attached to nearly all the houses, and the straight, clean streets added much to the beauty of this fairy scene. The city is supplied with pure water from the mountains, and a system of sewerage is now under completion. On an average 100 cases of typhoid fever occur annually. Malaria is almost unknown.

THE AUCKLAND HOSPITAL.

Auckland has only one public hospital, the Auckland Hospital. It is supported by appropriations made by the general government and the city. The main building was built about fifty years ago. It is built on the summit of a high hill, from which a splendid view of the harbor and city can be obtained. Seen from the harbor it is one of the most conspicuous landmarks of the city. The city has set aside for it a large tract of land, and the part around the buildings is well laid out in drives and walks, and ornamented by trees, flowering shrubs and flowers. The main building, of brick and cement, is three stories high, with large wards, well lighted and ventilated. A few years ago a Mr. Coatley donated to the hospital the munificent sum of $160,000, out of which four brick pavilions for women and children have been built, and $15,000 is now being spent in the construction of a modern

operating room, and equipments for the same. This operating room, now nearing completion, will be flushed daily from above, and the skylight of a double glass roof is constructed in such a manner that the light will be concentrated at a place corresponding with the location of the operating table. Dr. John C. Collins, the medical superintendent, took great pains to describe this feature of the operating room, as well as its ventilation. By the use of an electric apparatus the air of the room can be exhausted at any time it becomes contaminated. The operating room used at the present time is on the first floor, but is inadequate for modern requirements. The medical staff is comprised of three physicians, three surgeons, one oculist and aurist, no gynecologists and no obstetricians. The hospital proper and pavilions can accommodate 210 patients. Patients with means are required to pay, the amount depending entirely on their means. A charming feature in the wards of this hospital is an abundance of fresh-cut flowers on high, narrow, long tables at the foot of the beds, in constant sight of the patient when awake. The hospital has its own training school for female nurses, with an attendance of 64 at the present time. They are in training for three years, but receive a small compensation after three months. Among the interesting surgical cases shown by Dr. Collins were the following: A Maori who, by the accidental discharge of a shotgun he was handling, shot away the larger part of the body of the left side of the lower jaw. Edema of the larynx was threatened, and a tracheotomy was made. At the end of twenty-four hours the tube was removed, and although the left side of the face remained greatly swollen, he is improving rapidly. Several cases of compound fracture; resection of cecum for tuberculosis, gastro-enterostomy for stricture of the pylorus; extensive fracture of the skull in a boy, for which trephining was performed. On an average about 100 laparotomies are performed in the hospital every year by the different attending surgeons. This comparatively small number of abdominal operations, however, does not represent the bulk of this kind of work done in the city, as only the attending staff is permitted to operate in this institution, and many of these, and all other physicians perform their operations on private patients at their homes, or in one of a number of little private hospitals conducted by nurses. There seems to be no unanimity among the surgeons in the use of anesthetics and suturing material. Chloroform, ether and A. C. E. mixture are used as anesthetics, and silk, silkworm gut, catgut and kangaroo tendon as suture material according to the preference of the different operators.

THE MEDICAL PROFESSION.

I had abundant opportunity to experience that the medical profession of Auckland is cordial and hospitable. Dr. Edward W. S. Sharman, the quarantine physician of the port, after completing his inspection of the steamer, took me ashore in his steam launch, and from there directly to Dr. T. Hope Lewis, the most prominent surgeon of the city. To these two gentlemen, who gave me their whole time during the entire afternoon, I am greatly indebted for what I saw and learned in their city. There are 40 practitioners in Auckland. There is only one specialist for the eye and ear. All of the physicians do their own operating, including all kinds of gynecologic work. Dr. Lewis is the only one who is gradually leaving general practice, and will soon devote himself exclusively to surgery. The fees in Auckland are not high. Visits are charged for according to the patient's means from 75c to $2.50. The maximum figure is very seldom reached. For any capital operation $250 is regarded, even by the wealthy, as a very large fee, and most of the difficult operations are paid for at the rate of $100. Most of the physicians are graduates of English and Scotch universities, and consequently their practice of medicine and surgery represents the teachings of British authorities. They are all members of the British Medical Society, and depend for the current medical literature largely on its official organ, the *Journal of the British Medical Association*. The New Zealand branch meets once a year, and the city, or local branch, monthly. These meetings are well attended, and the transactions represent the clinical and scientific work of its members.

Therapeutics.

[Our readers are invited to send favorite prescriptions or outlines of treatment, such as have been tried and found useful, for publication in these columns. The writer's name must be attached, but it will be published or omitted as he may prefer. It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns without allusion to inquirer.]

Tabes Dorsalis.

Faure, in the *Lancet*, gives it as his opinion that the iodids and mercury are not responsible for the relaxations and diminutions in the symptoms which sometimes occur during the course of the disease, for such ameliorations are the rule. He further states that the disease is progressive in a third of the cases; it is arrested, improved, or gets well in about one-fourth of the cases; in the remainder it proceeds slowly, with periods of quiescence, and at times affecting the life of the patient seriously.

PROGNOSIS.

1. Early diagnosis means earlier treatment and better results.

2. The very general employment of mercurials and iodids in syphilis is probably a reason for the diminution in the evolution of tabes.

3. The tabetic is cared for in a hygienic manner as the tuberculous cases are, and he is not allowed to sit and fold his hands and resign himself to the fatal sentence which used to be pronounced against him as soon as the diagnosis was made.

GENERAL DIRECTIONS.

1. He must not allow the patient to think that there will be a complete and radical cure within a few months, or that there is any specific remedy for the disease.

2. He must not allow his patient to abandon himself to his lot as one without hope or to think that his disease is inevitably tending toward death, for such is not the case.

3. The patient should be told that the disease will probably not improve, that it will diminish his capacity for work, and he will have some suffering.

4. Watchful care on the part of the medical attendant and willing co-operation on the part of the patient will often avoid complications.

5. The patient may be told that tabetic patients have been known to recover.

SPECIAL DIRECTIONS.

1. Keep the bladder and bowels clean. 2. Avoid underfeeding and insomnia. 3. Live as much as possible in the open air. 4. Avoid overwork, either mental or physical. 5. Watch with care the condition of the circulatory system. 6. An annual "cure" of one or more months' duration should be taken, when the patient should have special treatment and training to repair the damage already done by the disease and put himself in a condition to resist complications. *a*. By special exercises he should increase the respiratory activity. *b*. He should also train his excretory system as regards urination and defecation. He may regain control of the lost voluntary motion. *c*. He may also submit himself to a special hygienic course of thermal hydrotherapy, and finally employ all methods which experience has already shown to be useful in cases of tabes.

Neurasthenia.

Merck's Archives recommends the following combinations:

R.	Tr. nucis vomicæ		
	Tr. conii, āā	3i	4
	Tr. calumbæ		
	Tr. gentianæ, āā	3iss	6
	Essentiæ anisi	mx	65

M. Sig.: Twenty drops in water before meals.

During the meal or following it a combination similar to the following is recommended to be taken in wine:

℞ Strych. arsenatis .....gr. 1/60 |001
Calcii glycerphos. .....gr. v |32
Syrupi aurantii .....℥i 4|

M. Sig.: Take at one dose in a wineglassful of wine after each meal.

Acute Otitis Media and Prophylactic Measures.

Parsons, in the *Northwestern Lancet*, gives the following advice as to the treatment of this condition:

1. Remove all hypertrophic and degenerated conditions of the pharyngeal lymphoid structures.

2. Treat the catarrhal conditions of the nose and nasopharynx and keep the mucous surfaces clean with alkaline antiseptic douches to aid in preventing the infectious material from entering the eustachian tube.

3. Douching should be done carefully and blowing the nose should be done with caution.

4. Prohibit digging away in the external auditory canal to remove cerumen.

ACTIVE TREATMENT.

1. A free movement of the bowels is desirable.

2. In the earliest stages the congestion and secretion may be lessened by the administration of the following:

℞ Atropin |
Aconitini, āā.....gr. 1/500 |00013

M. Sig.: Give as a single dose every hour until their physiologic effect has been produced.

3. For the pain chloroform may be poured into the ear, or the application of a 10 per cent. solution of cocain and adrenalin solution may be made to the drum head, and is often efficacious; or dry heat from a hot salt bag.

Inflation of the tympanum with the vapor of menthol and camphor will often relieve the pain by the action of the drugs and the equalization of the air pressure.

℞ Mentholi .....gr. i |06
Camphoræ .....gr. x |65
Liquid albolene .....℥i 30|

M. Sig.: Use locally to inflate the tympanum.

4. When all other efforts to relieve pain have failed, a thorough inspection of the drum head should be made, and if there is an accumulation of secretions behind it, a free incision of the membrane is demanded. This should be done under strict aseptic precautions as to instruments and field of operation. If pus is present the ear is to be packed loosely with sterile gauze, and a sterile dressing put on the outside.

There is difference of opinion as to whether these cases should be treated by the so-called dry method, which consists in packing the external auditory canal with dry sterile gauze after first cleaning out the canal, dry swab, or by the irrigation method. The author believes there are advantages in both methods, but if there is much pus present he prefers free irrigation with a 1 to 1,000 formalin or bichlorid solution, used until the return flow is clean, and followed by the instillation of a 10 to 20 per cent. argyrol solution. The argyrol is allowed to run into the tympanum through the perforation by inclining the head, and the external canal is then packed, inserting a small wick through the opening if possible. If the secretions gum up the canal they are easily removed by the application of peroxid of hydrogen. The discharge must be attended to carefully until it has ceased.

Chronic Otorrhea.

Nouveaux Remedes quotes Meniere as stating that carbolic acid is the best remedy for this disease. Hot water is injected into the affected ear, which is then painted with:

℞ Acidi carbolici (crystals)...gr. xv-lxxv 1.-5|
Glycerini puris .....mlxxv-cl 1.30-8|20

M. Sig.: Use locally.

Later, when the flow has diminished, use:

℞ Glycerini puris .....cl 8|20
Hydrarg. chlor. cor.....gr. 3/40-3/8 .005-0|025

M. Sig.: For local use.

Carbolated glycerin, besides acting as a cure, has a distinct analgesic action in otorrhea.

Chapped Hands.

Blake of London, "Eczema and Its Congeners," states that the following application made at night is an excellent method of preventing eczema of the hands in cold weather:

℞ Phenol ..... 5 parts.
Cade oil ..... 10 parts.
Nutritive cream ..... 500 parts.

M. Sig.: This should be vigorously rubbed in to promote free circulation. It is a good plan to wear a pair of loose leather gloves at night.

Ptyalism.

The *Medical Press* recommends the following:

℞ Tinct. myrrhæ .....℥iii 12|
Potass. chloratis .....℥ss 2|
Sodii chloridi .....℥ii 8|
Aquæ dest. q. s. ad.....℥viii 240|

M. Sig.: Use as a mouth wash. Repeat every two hours.

Hysteria.

Goodell recommends the following combination:

℞ Ext. sumbul |
Ferri sulphatis exsic., āā.....gr. xx 1|30
Pulv. asafetidæ .....gr. xl 2|60
Acidi arsenosi .....gr. ss |03

M. Ft. pil. No. xx. Sig.: One or two pills three times a day.

To Remove Warts.

The *Med. Review of Reviews* recommends the following:

℞ Ext. cannabis ind. fl.....℥i 4|
Acidi salicylici .....gr. x |60
Collodion q. s. ad.....℥ss 15|

M. Sig.: Paint freely with a camel's hair brush twice daily.

For Falling Hair.

Walsh recommends the following combination to prevent the falling out of the hair:

℞ Acidi salicylici .....℥iii 12|
Acidi carbolici .....℥i 4|
Olei ricini .....℥iii 12|
Spiritus vini rect. q. s. ad.....℥vi 180|

M. Apply freely to the scalp once or twice daily.

Medicolegal.

Death from Cut in Trimming Corn.—The United States Circuit Court, in Pennsylvania, holds, in the case of Nax vs. Travelers' Insurance Company, that where there was a self-inflicted knife cut of the insured's toe while he was trimming a corn, and, later, blood poisoning ensued, and resulted in his death, the injury was an "accidental, external, and violent" one within the meaning of an accident policy.

Hospital Not Liable for Negligence of Surgeon.—The Second Appellate Division of the Supreme Court of New York holds, in the case of Wilson vs. the Brooklyn Homeopathic Hospital, that a corporation existing as a public charitable institution, operating as a hospital is not liable, in conducting its hospital, for negligence in operating on a patient who pays only for board and attendance, and not for the surgeon's services, in the absence of proof that it failed to exercise reasonable care and diligence in the selection and employment of the surgeon. Nor was such a hospital rendered liable by testimony that the superintendent said that surgical treatment was included in the expense of room and board where it was clearly shown that the superintendent had no authority whatever to make any contract in behalf of the hospital to receive compensation for the services of surgeons or physicians in its employ.

No Authority to Employ Physician.—The Supreme Court of Minnesota says, in the case of Legault vs. Minneapolis Fire Department Relief Association, that the association was organized "to afford relief to such active members as may become sick, disabled, or injured," etc. The articles of association further provided that "any active member of the association who shall become sick or disabled or so unable to attend to his duty as a fireman, shall receive from the association while such sickness or disability continues such sum per week for sick benefits as may be designated by the by-laws." "In case

of an accident to any active member and his condition demands his immediate removal to a hospital the attending surgeon or any officer of the association may have such removal made at the expense of the association, and the president shall, as soon as practicable, call a meeting of the board of trustees," seven in number, to take such action as they shall deem proper. The by-laws provided for the duties of a surgeon, who should, "on notification from the president or vice-president of injury or sickness to an active member, visit and examine him and make a report," and also provided for "visits of such surgeon to the sick person," and for compensation at a specified rate for consultations by him, and other duties to be thus performed by that officer. The Supreme court holds that these articles and by-laws did not authorize or justify the employment by one of the officers (vice-president) of the association of a physician, not the regular surgeon of the association, to render medical services for a member injured at a fire, for an indefinite length of time, without the authority of the board of trustees. It says that while the general statement of the purpose of the association was to care for sick and disabled members, this was limited to the manner provided for in the articles and by-laws, and a contract for treatment not contemplated or prescribed therein could not be reasonably implied; and all persons dealing with the association must be held to do so with full knowledge of the limitations contained therein. Nowhere in the articles was there a provision which extended the general statement of the purposes to care for disabled members by the employment of a physician other than the regular physician of the company to render services without the authority of the board of trustees after proper notification. It was not definitely set forth and could not be implied.

Monomania, Immorality, Insanity and Insane Delusions.—The Supreme Court of Georgia says, in the case of Bohler vs. Hicks, that monomania is partial insanity, as contradistinguished from general insanity; the monomaniac is sane generally, but is insane on a particular subject or class of subjects. The party afflicted with monomania is conscious of his ability to manage his affairs, and is utterly unconscious that, with respect to any particular subject-matter, he is irrational or of unsound mind. The very name "monomania" implies partial insanity, and excludes the idea of any sort of ratiocination as to the particular subject to which the partial insanity relates. Monomania cannot be implied because a person takes a narrow or prejudiced or utterly illogical view of a particular subject. It is not the result of any conclusion; the person does not arrive at his conviction because of any attempt either at reasoning or investigation; the partial insanity is the offspring of a disordered intellect. A man may be utterly abandoned to every form of lust, and, though he has departed entirely from the paths of virtue, such depravity alone does not evince insanity. His conduct may be the result of a depraved nature, a conscious departure from the path of rectitude because of a depraved, but deliberate, choice; a preference for a sinful and immoral life over one of right doing and correct living. A sane man may have improper relations with women, and may persist in his wrongdoing despite the interference of others. Such perverse conduct does not amount to insanity. The conclusion that a testator was a monomaniac is not warranted by the bare circumstance that, actuated by a spirit of resentment against his wife, he disinherited her in his will for the sole reason that she had interfered with him in carrying out his deliberate choice to lead an immoral and dissolute life. An insane delusion was said by Sir John Nicol, in the celebrated case of Dew vs. Clark, 3 Add. Ecc. 79, to exist wherever a person conceives something extravagant to exist, which has no existence whatever, and he is incapable of being permanently reasoned out of that conception. The correctness of this definition of an insane delusion has been recognized in the great majority of the English and American cases. The delusion must spring spontaneously in the mind of the person, and not be the result of evidence of any kind. An "insane delusion" does not mean a mistaken conclusion from a given state of facts, nor a mistaken belief as to the existence of facts. An erroneous conclusion of a sane person may arise from incorrect reasoning, or from a deduction from information which he supposed to be correct. The true test between a delusion, used in the sense of a mistake of fact, and a delusion which is the offspring of a deranged mind, is that the latter springs spontaneously from disordered intellect, while the former is the result of an erroneous conclusion based on either a mistake of fact, or an illogical deduction drawn from such facts as they really exist. The subject-matter of an insane delusion must have no foundation in fact, and must spring from a diseased condition of the intellect. If the testator undertakes to make an investigation, and arrives at the conclusion that a certain state of facts exist which in point of fact does not exist, such conclusion may be attributable either to a mistake in judgment or a mistake of fact, and will not be evidence of insanity.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

September 24.

1 *Tuberculosis of the Abdominal Lymph Glands; Complications, Differential Diagnosis and Treatment. Charles F. Painter and Wm. G. Erving.
2 *Concerning the Syndrome of Conus Medularis and Cauda Equina. Alfred Gordon.
3 Case of Congenital, Supracotyloid Dislocation of the Hips with Cross-legged Progression. Henry Ling Taylor.
4 *Nerve Blocking to Prevent Amputation Shock; Illustrative Reports of Two Thigh Amputations. Hermann B. Gessner.
5 Case of Ruptured Tubal Pregnancy; Operation; Followed by Sapremia, Septicemia, Erysipelas; Recovery. Wm. H. Teller and Moses Behrend.
6 *Garlic; a New Cure for Tuberculosis and Lupus. John Knott.
7 *Insomnia of the Aged. Charles J. Aldrich.
8 Button in the Ear 27 Years. Deafness Cured by Its Removal. J. J. Richardson.

1. **Tuberculosis of the Abdominal Lymph Glands.**—The purpose of Painter and Erving is to show that tuberculosis of the abdominal lymph glands may give rise to spinal symptoms; to distinguish symptoms produced in this way from similar symptoms produced by other diseases, and to suggest that in some cases vertebral tuberculosis is caused by a direct extension from tuberculous abdominal lymph glands. There are three sources of infection: 1. Direct extension from adjoining diseased tissues, which is uncommon and of minor importance. 2. Infection from the blood stream, which is not infrequent. 3. Infection through the lymphatics, which is almost invariably the mode of infection in the more or less chronic and isolated gland lesions. Often the glandular involvement is more or less localized, and a fatal termination is due to intestinal obstruction, peritonitis and formation of abscesses progressing outward. Among cases with spinal symptoms, mesenteric tuberculosis must be differentiated from Pott's disease, aneurism of the abdominal aorta, malignant disease, especially cancer, osteoarthritis, osteomyelitis and other inflammatory diseases in or about the spine. The treatment of inflammations of the abdominal lymph glands is divided into (*a*) general, perhaps the most important; (*b*) mechanical—fixation of the spine in order to give relief from pain; (*c*) operative—the same rules holding good for the treatment of abscesses derived from broken-down lymph glands as obtain in the treatment of abscesses in tuberculous bone lesions. The prognosis is good as compared with that of vertebral tuberculosis in the same class of patients. The most serious features of the disease are extension to, and involvement of the vertebral column, rupture into the peritoneal cavity and intestinal obstruction in consequence of the pressure on coils of intestine or the matting up of such coils in the products of inflammation. Much can be done to favor the prognosis, according to the extent to which it is possible to provide efficient treatment and the intelligent co-operation of the patient. The paper concludes with a report of nine cases.

2. **Syndrome of Conus Medullaris.**—Gordon attempts to prove that the lower portion of the spinal cord, the conus medullaris,

contains special and independent centers for micturition, defecation, erection, ejaculation, and for the anal reflex, and cites a case in confirmation of his belief.

4. **Nerve Blocking to Prevent Amputation Shock.**—Gessner reports two cases in which he made use of the method advocated by Cushing with very satisfactory results. He recommends the procedure as one well worthy of further trial, promising much that is good, and so far, appearing to be attended by no disadvantages.

6. **Garlic in Tuberculosis.**—Knott reviews the therapeutics of garlic and calls attention to (*a*) the favorable reports that have been issued in connection with its administration in serious bronchial affections, and (*b*) the experiments of Carazzani, who attempted to show that a sufficiently generous use of garlic in tuberculosis will produce immunity to its infection. Of a group of guinea-pigs kept in an atmosphere charged with tubercle bacilli, those whose daily diet had contained 1 gram of garlic were found at the end of three months to be free from tuberculosis, while the others were all badly infected. The efficiency of garlic in pathologic conditions of the respiratory mucous membrane is due to its essential oil, which is almost wholly composed of allyl sulphid, which is eliminated very largely through the respiratory tract.

7. **Insomnia of the Aged.**—According to Aldrich this condition is due to starvation of the brain cells, the result of narrowed capillaries and an impoverished blood supply. The condition can be relieved by diffusible stimulants and some hot and easily digestible and agreeable food taken at bedtime, and repeated during the night if necessary.

New York Medical Journal.

September 24.

9 *Summary of an Experimental Research Into Strychnin in Shock and Collapse, with Illustrative Protocols. G. W. Crile.
10 *Some Unusual Forms of Acute Myelitis. B. Sachs.
11 Ready Methods of Formulating Modified Milk Mixtures. E. K. Shelmerdine.
12 The Present Condition of Tenontoplasty. (Continued.) Prof. Vulpius.
13 Some Causes of Menstrual Disorders in the Girl. R. S. Hill.
14 *Immunity. Anna M. Stuart.

9. **Strychnin in Shock.**—A careful investigation has been made by Crile as to the action of strychnin in shock and collapse. In the majority of instances, in the normal animal, when sufficient strychnin is given to cause an increased excitability of the spinal cord, as indicated by heightened reflexes and an increased muscular tone, a rise in blood pressure was noted. In smaller doses occasionally a slight interimmediate fall, a slight immediate rise, or later irregularities were noted, but no noteworthy change occurred. Following the administration of physiologic doses of curare and convulsive doses of strychnin, the blood pressure rose as high as in the experiments in which convulsions did occur. When both vagi and accelerantes were severed, curare and strychnin given, the general effect on the blood pressure did not differ materially from the effects of corresponding doses on the normal animal. Small doses of strychnin on the whole seemed to improve respiration. Larger doses were frequently followed by respiratory failure. After the blood pressure had reached the stage of terminal helplessness, the administration of saline solution caused a rise which continued for some time during the flow. The administration of adrenalin was followed by a rise in proportion to the amount given. Bandaging and other means of external pressure produced a rise of blood pressure. Digitalis administered in the terminal breakdown in most instances produced no effect. The details of the experiments are given in full as observed in six dogs.

10. **Acute Myelitis.**—Sachs discusses the acute myelitis which is not due to trauma, specific infection or infectious diseases, and reports a case in which the symptoms pointed to an acute transverse myelitis, yet the autopsy failed to reveal the first sign of any inflammatory process. The case admits of no other interpretation than that of being an ischemic necrosis due to a general arterial sclerosis. The author also reports a case of streptococcic myelitis. Both these cases are recorded for the purpose of insisting that the spinal cord does at times become the seat of morbid processes which befall the brain much more frequently, and that it will not do to restrict the term myelitis to the morbid process that can be distinctly traced to trauma, syphilis and the ordinary acute infectious diseases.

14. **Immunity.**—Stuart believes in the possibility of destroying the power of the blood to develop immunity by a lack of use; that the typhoid, pneumonia and consumptive patient will stand a better chance of developing his own antitoxin if we conserve his strength and stop irritating his tissues with foreign substances. In our eagerness to destroy the germ, says Stuart, we are forgetting to build up the immunity of the patient against the germ.

Boston Medical and Surgical Journal.

September 22.

15 The Tendencies of the Practice of Medicine as a Profession and an Art. Lewis M. Palmer.
16 *Examination of Pleural Fluids with Reference to Their Etiology and Diagnostic Value. Percy Musgrave.

16. **Examination of Pleural Fluids.**—Musgrave details the technic of cyto-diagnosis, inoscopy and the results obtained in 50 animal inoculations made with a fluid obtained from pleural exudates with a view to determining the specific cause of the effusion. The article is not complete in this issue, and a summary of results will be given later.

Medical News, New York.

September 24.

17 Home Treatment of Tuberculosis by Means of Hospital Dispensaries. John W. Brannan.
18 *Bone and Cartilage in the Tonsils. James E. Newcomb.
19 *The Distinction Between Fracture of the Neck of the Femur and Epiphyseal Disjunction in Early Life with Reference to Its Influence on Prognosis and Treatment. Royal Whitman.
20 *The Rectal Administration of the Newer Hypnotics. Morris Manges.
21 *The Medical Treatment of Appendicitis. A. J. Hall.
22 The Correction of Abnormal Conditions of the Blood Relative to Surgical Operations. S. C. Emley.
23 *Addison's Disease, With and Without Renal Tuberculosis. Charles F. Withington.

18. **Bone and Cartilage in Tonsil.**—Newcomb speaks of the presence of true osseous and cartilaginous tissue in the tonsil and reports the case of a woman, aged 30, who had an abnormally long styloid process projecting into the tonsil, the tip of which was removed accidentally during a tonsillotomy. Other cases that have appeared in the literature are cited.

19. **Distinction Between Fractures.**—The object of Whitman's paper is to call attention to two forms of fracture of the neck of the femur, of which an accurate diagnosis may have an important influence on treatment. Simple fracture should be treated by fixation at the limit of normal abduction, an attitude which implies restoration of the depressed neck to its normal position. Partial epiphyseal separation should be treated by direct operative reposition of the head. Excision should be an operation of necessity rather than of choice. One should never be content with mechanical support, however efficient it may be in relieving the immediate symptoms. Recognizing the fact that normal function is dependent on normal form, the aim should be to remedy deformity whenever it is practicable.

20. **Rectal Administration of Hypnotics.**—The value of the rectal administration of some of the newer hypnotics, such as sulphonal, trional and veronal, is emphasized by Manges. Although the first two are almost insoluble, clinical experience proves that they are absorbed by the rectal mucous membrane, and that the speed of absorption is about the same as when the drugs are taken by mouth. Hedonal, chloralose, and chlorotone are so slightly soluble as to be practically worthless in this connection: on the other hand, sulphonal acts more powerfully than trional. Heroin, chloralamide and phenacetin are also readily absorbed. Veronal is freely soluble and may be administered in suppository form or in solution, either in warm milk or preferably in diluted sherry to which a little salt or sugar has been added to increase the speed of absorption. No irritation of the rectum following the administration of any of these hypnotics has been observed.

21. **Medical Treatment of Appendicitis.**—Hall is a firm believer in the medical treatment of appendicitis because, he says, the tendency of the disease is toward recovery. He ad-

vises, however, that in recurrent cases an operation should be performed during the interval after recovery from the second attack. The medical treatment as carried out by him is as follows: Absolute rest in bed; relaxation of the abdominal muscles by flexing the thighs and supporting the knees by pillows. A liquid diet, chiefly composed of milk, four to six enemas a day, and copious enemas of soapy water or sweet oil every four hours. A hot flaxseed poultice over the whole abdomen, replacing it every two or three hours, night and day, until the temperature is normal. The only counter-indication for the use of enemas, or at least one calling for great care in their use, is the involvement of the lower bowel in the inflammatory process. The larger the amount of liquids consumed the better, as they not only nourish the patient, but by means of the diuresis produced render material aid in the elimination of toxic material. Creosote, minim 1, in two drams of lime water, may be administered every two or three hours, and arsenite of copper, grain 1/100, every three hours. The arsenite of copper is employed as an intestinal antiseptic and prevents or diminishes tympanites and the tendency to vomiting, and has a marked anodyne effect. If the vomiting does not subside, and should it become stercoraceous, occlusion or paralysis of the bowel is indicated, and operation is the only hope of relief. Opiates and cathartics should never be given.

23.—See abstract in THE JOURNAL, xlii, p. 1586.

Medical Record, New York.

September 24.

24 *Operations on the Eyeball in the Presence of an Infected Conjunctival Sac. Charles S. Bull.
25 *The Use and Abuse of Athletics. Robert E. Coughlin.
26 *Clinical Study of Certain Forms of Pericarditis, with Report of Pericardial Effusion Complicating an Extensive Burn of the Chest. H. E. Lewis.
27 Social Causes of Criminal Abortion. Inez C. Philbrick.
28 The Genesis of Sleep. A. E. Gibson.
29 Icterus in Secondary Syphilis. B. C. Hyde.
30 Polymazia Among Enlisted Men of the Marine Corps. R. O. Marcour.

24. **The Eyeball in Infective Conjunctivitis.**—Bull summarizes his paper as follows:

1. A careful microscopic and bacteriologic examination should be made of the contents of the conjunctival sac in every suspected case, carrying the examination as far as the cultivation of the bacteria in a proper medium, and the subsequent inoculation of the germs.

2. If toxic germs are found in great numbers, no matter what their varieties, no operation on the eyeball should be undertaken until the germs have disappeared, and the conjunctival sac has been rendered as sterile as we can hope to make it.

3. If there be suppurative disease of the lachrymal passages, whether of canaliculi, sac or nasal duct, all operations on the eyeball are positively contraindicated. The lachrymal sac must be excised, and the lachrymal puncta must be obliterated by the galvano-cautery, before any operation on the eyeball is undertaken. In the case of catarrhal dacryocystitis, or of mucocele of the sac, both canaliculi should be incised, and the sac injected daily with an antiseptic astringent solution, and free irrigation through the nasal duct carried out until all secretion has ceased. Even in cases of great urgency, as, for example, acute inflammatory glaucoma, the writer would not feel himself justified in modifying the above statement.

4. If the secretion of the conjunctival sac on examination is found to be infected, but the bacteria are few in number and of slight toxic variety, operations may be done on the eyeball when necessary, but these eyes should be opened and examined twice in the twenty-four hours, and the conjunctival sac gently irrigated with warm normal salt solution, or warm sterilized boracic acid solution, and then the eye should be immediately rebandaged.

5. In operating on the eyeball in the presence of an apparently normal, sterile conjunctival sac, the following steps should be taken:

First. The forehead, eyebrows, temple, cheek, bridge of the nose and external surface of the lid should be carefully cleansed with hot water and soap and dried with aseptic cotton pads.

Second. The margins of the lids should be carefully but gently rubbed with sterilized moist cotton pads, and simultaneously irrigated with a warm sterilized physiologic salt solution.

Third. Careful irrigation of the conjunctival sac with the same sterilized normal salt solution and then closing the lids with a moist sterilized cotton pad. The lids should remain closed in this way until the speculum is introduced.

6. In all cases the bandage should be removed and the eye examined under the strictest aseptic precautions, as strict as those employed at the time of operation.

7. On the first sign of infection of the wound, the edges of the lids are to be thoroughly cleansed in the same manner as at the time of operation; the conjunctival sac is to be thoroughly irrigated with the sterilized normal salt solution; the wound is to be reopened and cauterized through its entire length with the galvano-cautery; and the anterior chamber is to be gently but carefully irrigated with a sublimate solution (1-5000); and then the conjunctival sac must be again irrigated, and the lids must be closed simply under a moist sterilized pad.

25. **Use and Abuse of Athletics.**—Coughlin considers physical over-exertion and its effects on the general health as well as on the individual functions, and the benefits to be derived from a moderate indulgence in athletic exercise. The prime object of athletics is improvement of the general health, but to obtain good health muscle building is not a necessity. There is no evidence to show that athletics and muscle building improve the constitution; in fact, to obtain health one must not be in a perfectly trained condition, owing to the effects of severe training on the nervous system. It is necessary to keep in mind the fact that hypertrophied muscle always has a tendency to degenerate. This is especially true of the heart muscle. Athletics are beneficial when properly and judiciously applied, and are very injurious when indulged in indiscriminately.

26. **Pericarditis.**—According to Lewis, pathologic conditions of the pericardium are by no means as uncommon as may be inferred from their infrequent ante-mortem recognition. Pericarditis, if looked for, will be found to occur much more frequently than is commonly supposed. The symptoms of the condition may be obscure or they may be overshadowed by those of some other disease, such as Bright's disease, and therefore go unrecognized. Many factors contribute to the production of this condition, and one case is reported by the author in which a burn on the chest was followed by pericarditis. The treatment is but little understood. Lewis says that the pain can be relieved promptly by dry cupping or counter-irritation over the painful region. Absolute rest in the prone position is important. Anti-rheumatics are useless and nothing approaches the value of epsom salts in large and often repeated doses, always administered in saturated solution. Heart tonics and stimulants are contraindicated unless there is evidence of cardiac failure. When effusion occurs and the conditions are not alarming, it is always safe to wait. When the effusion becomes alarming, paracentesis is the only thing to do.

St. Louis Medical Review.

September 17.

31 *Observations on the Cause and Treatment of Hay Fever. W. P. Dunbar.
32 *The Practical Value of the Immunity Theory. A. P. Wassermann.

31. **Hay Fever.**—Dunbar's paper is a review of present-day knowledge of the etiology of hay fever, with a brief reference to the author's serum treatment. Attention is called to the fact that the results accruing from the use of the antitoxin are far superior when the serum is used strictly as a prophylactic. It is very difficult to stop a severe attack of hay fever by using the antitoxin as a curative agent. The average success, according to statistics of several hundred cases, seems to amount to about 65 per cent. Efforts to make a preparation that can be used hypodermically are still being carried on, and since it has been proven that the antitoxin part of the serum is resident entirely in the globulin, Dunbar is now experimenting with an antitoxin from which the albumin has been eliminated, in order to find out whether it can be used without causing any irritation. Dunbar is also engaged in the manufacture of an antitoxin to be used in the prevention and treatment of the autumnal catarrh prevalent in this country and due to the pollen of goldenrod and ragweed.

32. **Immunity.**—This paper by Wasserman is a very brief review of the subject of immunity and serves to convey the information that the author has succeeded in isolating a toxin which is bactericidal to the diphtheria bacillus. This new sera is dried *in vacuo*, and pulverized or made into pastilles. The patient merely sucks the pastilles or snuffs up the powder. This serum is to be used in conjunction with diphtheria antitoxin, because a patient treated and cured by antitoxin may still have in its throat diphtheria bacilli possessing the power of infecting other children.

Cincinnati Lancet-Clinic.

September 24.

33 Traumatic Neurosis. David I. Wolfstein.
34 The Plea of Insanity. Robert H. Grube.
35 Two Cases of Pancreatitis. Wm. J. Gillette.

Archives of Ophthalmology, New York.

September.

36 *Bacteriologic Study of Trachoma. Arnold Knapp.
37 Unusual Dilatation of the Superior Temporal Artery and Vein of the Retina. B. L. Millikin.
38 Adeno-carcinoma of the Eyelid. J. M. Mills.
39 Glaucoma-Simplex: Report of Cases. C. Horstmann.

40 Peculiar Change in the Choroid After Ophthalmia Nodosa. W. Reis.
41 Two Cases of Family Macular Degeneration of the Cornea. C. A. Veasey.
42 Case of Pseudoleukemic Lymphomata of the Eyelids, Followed by a Generalized Formation of Lymphomata. A. A. Deutoit.
43 *The Present Status of Cervical Sympathectomy for Glaucoma-Simplex. Robert G. Loring.

36. **Bacteriology of Trachoma.**—During the past two years Knapp has made bacteriologic examinations of 120 cases of trachoma. An influenza-like bacillus, identical with the Mueller "trachoma bacillus" was found present in 8 of the cases. It was found in great numbers in a case of clinically "acute" trachoma. This organism could not be differentiated from the true or pseudo-influenza bacillus either morphologically, culturally or by animal experimentations. Knapp is inclined to believe that its presence in these cases of trachoma was accidental, inasmuch as there is a form of influenzal conjunctivitis which constitutes the only manifestation of influenza. The organism found was of small size, rounded ends and stained with difficulty—best with diluted carbol-fuchsin. It grows only on hemoglobin media as small, dewdrop-like colonies scarcely visible to the naked eye. The culture can be continued indefinitely on proper media. The bacilli were found to be nonpathogenic for rabbits.

43. **Cervical Sympathectomy.**—The present status of this operation in the treatment of glaucoma simplex is discussed by Loring, who says that while in acute and chronic inflammatory glaucoma the removal of the superior cervical ganglion has failed to establish its claim as a rival to iridectomy, and that little of a more favorable nature is to be expected from it in the future, the matter is entirely different in glaucoma-symplex. Here iridectomy is admitted to be of much less value, in some cases seeming even to diminish rapidly what little vision remains. Loring has collected from the literature 60 cases of glaucoma-simplex treated by sympathectomy, counting each eye as one case. In a great majority of the cases there is a more or less striking improvement following sympathectomy. But when those cases are ruled out that were reported without subsequent observation of some weeks or months, at least, the verdict is not so favorable. Many cases soon suffer a relapse, the vision becoming the same as before operation or even worse, or a glaucoma-simplex develops rapidly into an acute glaucoma. This happened in 4 of the 60 cases. Of the 60 cases, the number that was observed for three months or more is 41. Of these 29, or 70 per cent., were improved for three months or more with no record or relapse. Few of the cases were observed longer than one year. The remaining 12 cases are reported as relapsing within various periods from nine weeks to one year, 4 of these becoming acute glaucoma. Serious after-results from sympathectomy are not reported either from the single or double operation. Loring believes that sympathectomy is a distinctly justifiable operation that ought to be more often tried as a final resort in glaucoma-simplex when, notwithstanding myotics, iridectomy and sclerotomy, the disease progresses steadily toward eventual blindness.

Journal of Advanced Therapeutics, New York.

September.

44 Chronic Ulcers Cured by Metallic Electrolysis. Francis B. Bishop.
45 Dispensary Treatment of Tuberculosis. J. L. Barton.
46 Absorption of a Large Uterine Fibroid by X-rays. J. E. Hett.
47 Retrospect of the Second International Congress of Electrotherapeutics Held in Switzerland. Robert Newman.
48 *Radiography. Herman Grad.

48. **Radiography.**—Grad discusses this subject with reference to its technic, the apparatus used, and the elements that enter into the successful use of the *x*-ray for skiagraphic work.

Chicago Medical Recorder.

September.

49 The Flap Method in Herniotomy; Imbrication a Complete Solution. E. Wyllys Andrews.
50 *Autoplastic Suspension of the Uterus, with Report of Cases. F. H. Martin.
51 *Hemophilia with Postpartum Hemorrhage. Robert Gay.
52 Three Cases of Penetrating Wounds of the Chest involving the Diaphragm and Abdominal Viscera. Daniel H. Williams.
53 Placenta Previa Complicated by Uterine Tumor. Helidor Schiller.
54 Points on Adenoids and Adenoid Operation. E. F. Snydacker.
55 Varicose Veins and Ulcers of the Leg and Their Treatment. W. S. Royce.

50. **Autoplastic Suspension of the Uterus.**—Autoplastic surgery, says Martin, is a simple, quick, safe and efficient suspension of the uterus attended with a minimum of risk of fixation, and does away with any form of permanent buried suture material, by substituting living peritoneum which is utilized in such a way that its vitality and integrity are maintained. A strip of peritoneum, one-third of an inch wide, is severed with scissors from one side of the wound; the upper end of this strip is severed from its peritoneal attachment, thus leaving a ribbon of peritoneum attached at its lower end beneath the lower angle of the wound to the parietal peritoneum above the bladder. The uterus is brought forward, a ligature carrier is passed from behind forward just back of the crest of the uterus, beneath its peritoneal covering for a distance of half an inch, and as it emerges at the crest of the uterus it is made to grasp the end of the ribbon of peritoneum and drawn back through the original opening, so that the uterus is suspended by the peritoneal strip. The uterus is slid well down on it until the fundus lies forward beneath the lower angle of the wound. A supporting catgut ligature is passed through the peritoneal coat of the uterus just behind the peritoneal ligament, and the uterus is temporarily suspended by this by passing the two free ends through the peritoneum and deep fascia on either side of the wound and tying it. The upper free end of the peritoneal strip is secured by including it in the running catgut suture which closes the peritoneum, thus re-uniting it to the peritoneum from which it was severed. Martin has examined the uterus bimanually after suspension by this method in over 300 cases, at periods varying from two weeks to eight years, and has always found the results to be an excellent one. Six pregnancies occurred in this series, and in none of them did the woman suffer any unpleasant symptoms during gestation or labor. There was no appreciable pull on the uterus or abdominal wall; the cervix was normal in location. The paper is closed with the following summary:

1. A very small percentage of uncomplicated retroversions may be cured by correcting an anterior position of the cervix by lengthening the anterior vaginal wall and shortening antero posteriorly the mucous membrane of the posterior vaginal vault after the Schücking method.
2. The Alexander operation of shortening the round ligaments is a safe, rational and permanently satisfactory procedure in persistent retroversion in which no pelvic complications exist demanding a peritoneal opening and should be pursued as a routine operation in such cases.
3. In slight adhesions of the fundus of the uterus with little other pathology to be palpated, a posterior vaginal incision may be made by one accustomed to deep vaginal operation, the adhesions separated and the sacro uterine ligaments shortened.
4. With slight adhesions present and little pathology to be demonstrated, an anterior vaginal incision is justified in the hands of an experienced operator, provided that he adopts a vaginal round ligament operation for correcting the displacement and never a fixation.
5. When an Alexander operation is contraindicated in a persistent retroversion, because of doubt as to pelvic adhesions or diseased adnexa, it should become a routine procedure to open the peritoneum by a short exploratory incision through the abdominal wall above the symphysis for the purpose of managing the adhesions and diseased adnexa.
6. Some form of simple superficial ventral suspension should be followed as a routine method of retaining the uterus forward in cases where sterility is rendered imperative from the nature of the accompanying procedure, or when the patient has passed the menopause.
7. When the repair of complicating conditions in retrodisplacements requires a laparotomy, but the operative procedure leaves the woman with child-bearing possibilities, a superficial ventral suspension or intraperitoneal shortening of the round ligaments should be employed to retain the uterus forward.
8. In a small but definite percentage of cases of complicated retroversions where accompanying pathology is such as to cause extensive denudations of the peritoneal covering of the uterus, or where the repair work on the appendages is such as to be liable to lead to dystocia, the surgeon should at once render the patient sterile by amputating the tubes into the horn of the uterus, obliterating them by inversion sutures, and then suspend the uterus.
9. In performing a suspension or an Alexander, one important element of danger can be eliminated by substituting for dead permanent suture material my autoplastic methods of securing the suspensory ligaments.

51. **Hemophilia with Postpartum Hemorrhage.**—Gay reports a case of postpartum hemorrhage in a hemophiliac complicated by intrapartum sepsis. Following the birth of the placenta, and in the absence of cervical laceration, there continued a considerable amount of oozing which, in spite of ergot, packs, and massage, continued until the pulse ran up to 175 twenty-four hours after delivery. The temperature rose steadily until it reached 105.8 on the fourth day. On the eleventh day it took

on a distinctly septic character; on the twenty-fifth day metastatic abscesses were opened, and from thence onward the pyrexia rapidly disappeared. The highest temperature record was 106.8, the lowest 97.6. Pure cultures of streptococcus were isolated on the ninth day from the cervix and also from the pus of abscesses on the arms and legs. The treatment consisted of hot intra-uterine douches, saline infusions, calcium chlorid, grain 10, every four hours. The uterine oozing ceased at the end of the fourth day. When the patient seemed in extremis, irrigations of the colon were begun. Tepid salt solution was allowed to filter in without intermission, except for a daily cleansing soap and glycerin enema, for five days. After this only two quarts were allowed to run into the colon every six hours, and at the twentieth day of the disease colonic irrigation was discontinued. Gay emphasizes the value of these irrigations, and is convinced that they were instrumental, to a very large extent, in saving the life of this patient.

Northwestern Lancet, Minneapolis.

September 15.

56 *Gastrostomy in Esophageal Stricture. James H. Dunn.
57 Medical Organization. George W. Baker.
58 *Disseminated Miliary Tuberculous Peritonitis, with Ileus; Primary Intestinal Tuberculosis Involving the Appendix and Cecum. Andrew J. Hosmer.

56.—See abstract in THE JOURNAL of July 2, p. 70.

58. **Tuberculosis.**—A case of disseminated, miliary, tuberculous peritonitis with ileus, and one of primary intestinal tuberculosis involving the appendix and cecum are reported by Hosmer. The first patient, a male, aged 20, family history negative, was perfectly well until six months before seeking medical aid. At that time there began a pain in the abdomen, principally toward the right side. He lost in weight and his abdomen became a little more prominent. When the obstruction occurred the abdomen was greatly distended, the pulse very rapid, temperature only slightly elevated, and the patient in a very critical condition. On opening the abdomen it was found that the obstruction was one of so-called paralysis of the bowel due to extensive tuberculous disease. An enterostomy was performed, and later six inches of the intestine was removed, and anastomosis being affected with a Murphy button, reinforced by the Halsted stitch. The patient recovered from the operation and apparently from the disease. The history of the second case is somewhat similar to that of the first, except that the pain was of three years' duration. There was no loss in weight. The pulse was about 100; temperature normal; abdomen retracted, very sensitive and hard. On palpation a sensitive, moveable mass, the size of a child's fist, was felt in the cecal region. At the laparotomy it was found that the mesenteric glands were slightly enlarged. The appendix, about four inches of the cecum and a portion of the ileum were greatly thickened and apparently agglutinated together. The intestinal wall was nearly destroyed, and an early perforation appeared imminent. The appendix, a portion of the ileum and the ascending colon above the ulcerated area were resected, and an anastomosis made between the ileum and the ascending colon by means of a large Murphy button without cutting the walls of the gut or using ligatures. The anastomosis was reinforced by means of a Halsted stitch. In the first case the button was passed on the tenth day, and in the second case on the seventh day. The patient was discharged after three weeks and has been in excellent condition ever since.

Detroit Medical Journal.

September.

59 The Conscientious Surgeon. C. T. Newkirk.
60 *Chronic Synovitis. Vine LaRue Smith.
61 Artificial Feeding of Infants. W. G. Hutchinson.
62 Panophthalmitis Due to Septic Embolism; Metastatic. Eugene Smith.
63 A Plea for Alkaloids. S. J. Wilson.
64 Should a Physician Dispense? F. G. Scott.

60. **Chronic Synovitis.**—The treatment followed by Smith consists of the use of an appliance which secures extension and counterextension, together with mild mechanical stimulation over the affected part. In one case cited, a chronic synovitis at the ankle joint, the appliance was made of steel, with a sandal, two bars and two bands, with joint at the ankle. There were six buckles on the sandal, three on each side, which fastened to a plaster bandage around the ankle, and two buckles at the top of the bars, fastened to plasters on the limb. The appliance was also provided with a set screw at the ankle which prevented motion. By this means the foot was held rigidly, as in a plaster cast, and the disadvantages of the latter were done away with. The foot was brought into an extended position by means of an elastic toe strap. The result in this case was an excellent one. In a second case cited, one of chronic synovitis of the knee joint, the patient was fitted with an appliance made of steel, a sandal, two bars, four bands and a seat-piece. In this case joints were made at the knee and at the ankle, with two buckles, one on each side of the sandal, which were fastened with plaster on the limb, thus giving extension. The seat-piece was fastened to the appliance with a rachet, thus giving counter extension. A rachet was also provided beneath the knee by which the limb was straightened slowly, and with practically no pain to the patient. In both cases the parts were stimulated by vibratory massage.

Medical and Surgical Monitor, Indianapolis.

September 15.

65 Asthenopia and a Few Facts That Ought to Be Generally Known About It. David W. Stevenson.
66 Cancer of the Larynx, with Report of a Case. W. H. Williams.
67 Some Phases of Tuberculosis. B. Van Sweringen.
68 Prophylactic Use of Antitetanus Serum—Two Cases. E. S. Alexander.
69 *The Manner of Stripping the Seminal Vesicles. Joseph Rilus Eastman.

69. **Stripping the Seminal Vesicles.**—Stripping of the seminal vesicles, says Eastman, not only empties these organs of pathologic contents, but stimulates as does a sound in the urethra and promotes re-absorption of inflammatory infiltrations and exudation. It is essential that a distinct plan for the expression of the contents of the vesicles be followed. A long forefinger offers some advantage in the manipulation of these organs; still, if the operator possess the requisite skill and if he patiently overcomes the resistance of the perineal muscles, the shortness of the index finger becomes a matter of less importance. Eastman employs the right index finger in stripping the left vesicle (the patient being in the standing position), and the left index finger in stripping the right vesicle. In this way each vesicle may be compressed between the finger and the corresponding side of the bony pelvis. Instead of simply pushing against the vesicle with the finger tip, the tip of the finger may be passed to the inner side of the vesicle and from above downward along the inner posterior aspect of the vesicle as the organ is drawn and compresesd laterally against the firm resisting pelvic musculature.

Archives of Pediatrics, New York.

September.

70 *An Analysis of 118 Cases of Lobar Pneumonia in Infancy. John Lovett Morse.
71 *Acute Myocardial Insufficiency in Some Infections in Children. F. Forchheimer.
72 Gastrointestinal Toxemia. D. K. Rachford.
73 *Percussion of the Skull with Especial Reference to the Occurrence of MacEwen's Sign in Meningitis and Cerebral Disease of Children. Henry Koplik.
74 Congenital Hypertrophic Stenosis of the Pylorus in an Infant, with Report of a Case. John Dorning.

70. **Lobar Pneumonia in Infancy.**—Morse's findings may be summarized as follows:

Lobar pneumonia is more common and occurs relatively more frequently in comparison with bronchopneumonia in infancy than is generally supposed. The analysis of these cases shows the following points: The onset was less stormy than is generally thought. It was often ushered in by vomiting, but rarely by a convulsion. It usually began with fever and cough, which were often accompanied by apathy or drowsiness. Movement of the alæ nasi was not a constant symptom. A whole lobe was more often involved than a part. The left lower lobe was the one most commonly involved. The right upper lobe and right lower lobe came next in frequency. The portion of the lungs involved was relatively the same in the fatal cases as in those which recovered. As a rule, the area involved was larger in the fatal cases. The average duration of the fever in the cases that recovered was about eight days, being nearly the same in both years. The course was more often short in the first year, however, than in the second. The average duration of the fever in the uncomplicated fatal cases was 12.8 days; that is, the duration of the fever was longer in the fatal cases than in those that recovered. The highest temperature was usually between 103 F. and 106 F., the number of cases being nearly the same for each degree. The temperature fell by crisis in 68.8 per cent. Crises were less common in the first than in the second year. Collapse during the crisis was very unusual. Pseudo-crises were not very common, but irregularities and remissions in the temperature

were not at all unusual. The mortality was lowest when the temperature did not rise above 103 F., and highest in those cases in which it went over 106 F. The degree of fever between 103 F. and 106 F. had no apparent effect on the mortality. A high temperature was no more fatal in the second year than in the first year. The usual pulse rate was between 150 and 170. No case died in which the pulse was not over 140. The rate of the pulse, when it was above 140, had little or no apparent influence on the mortality. The usual respiratory rate was between 55 and 80. No case died in which the respiration was below 55. The rate of the respiration, when above 55, had no apparent effect on the mortality. The mortality, excluding the cases in which death was due to empyema, was nearly 23 per cent. It was almost twice as great in the first as in the second year, being 32 per cent. and 18 per cent. respectively. Otitis media was the most common complication, occurring in 18 per cent. Empyema was the next most frequent, occurring in about 8 per cent.

The prognosis of lobar pneumonia in infancy varies decidedly with the age of the infant, and to a certain extent with the amount of lung involved. The prognosis is good when the temperature is not over 103 F. It is serious when it is above 106 F. Variations between these points make little or no difference in the prognosis. The prognosis is good when the pulse is not over 140 or the respiration over 55. The amount of the increase above these limits is of little importance.

71. **Acute Myocardial Insufficiency.**—Forchheimer points out the large number of the acute myocardial insufficiencies developing in connection with the infections in childhood—scarlatina, diphtheria, rheumatic fever, septicemia, typhoid fever and pneumonia. For uncomplicated myocardial insufficiency the first principle in the treatment is absolute rest. The digitalis group of drugs may be used; their efficiency depends largely on the amount of myocardium affected. Predisposing causes should be controlled. Stimulants will be required in most of the cases, from alcohol to camphor or ether, according to the severity of the case. The convalescence must be especially guarded, and for the purpose of strengthening the myocardium mechanical means are invaluable—Swedish movements, massage, vibratory methods. The diet is the same as in all myocardial affections. Laxatives that act violently should be avoided. Strychnia may be used for its general tonic effects. Nitroglycerin should never be used unless there be anginous attacks. Care must be taken to exclude the existence of vasomotor paralysis, when nitroglycerin does harm. For the treatment of vasomotor paralysis, Forchheimer advises hypodermic injection of adrenalin. Inasmuch as its effects are transitory, the injections have to be repeated every two hours. Saline transfusions are used in the beginning in order to keep up the heart's contractions. Ice-bags are put on the abdomen to stimulate the splanchnic reflex. After the most violent symptoms have passed over, caffein soda salicylate is given every two to four hours, alternating with adrenalin, which is gradually dropped.

73. **Percussion of the Skull.**—After careful investigation, Koplik advises that the MacEwen sign must be accepted with great caution in the case of infants below 2 years of age. It is one of the most useful signs of fluid in the lateral ventricles of the brain in various forms of meningitis, especially of the tuberculous type, and in tumors at the base of the brain. He emphasizes that in seeking this sign the patient must assume the sitting posture, as otherwise error is inevitable.

Medical Age, Detroit.

September 10.

75 Differential Diagnosis and Complications of Appendicitis. Daniel N. Eisendrath.
76 Headaches. O. W. Hunter.
77 Aneurism of the Aorta. Charles L. Mix.

Medical Fortnightly, St. Louis.

September 10.

78 A Decade in the Profession. J. T. Woodward.
79 Mastoid Disease and the General Practitioner. H. Jurgens.
80 Diagnostic Therapeutics. A. L. Benedict.

American Practitioner and News, Louisville, Ky.

September 1.

81 Purulent Inflammation of the Mastoid Process and Its Terminations Illustrated with Cases. Adolph O. Pfingst.
82 Hydrophobia. C. A. Edelen.
83 Massage and Electricity Versus Osteopathy. John English.

Merck's Archives, New York.

September.

84 Conium Maculatum and Its Alkaloids. J. M. French.
85 An Index of Diseases Alphabetically Arranged with Their Modern Treatment. G. Bjorkman.
86 Puerperal Eclampsia. R. C. Wintermute.

Denver Medical Times.

September.

87 Case of Spleno-medullary Leukemia Cured by the X-ray. Thomas B. Eastman.
88 The Obstetric Anatomy of the Pelvic Soft Parts. T. Mitchell Burns.
89 Argument Supporting the Principles on Which "A Model Act" Is Drawn. S. D. Van Meter.

Texas Medical Journal, Austin.

September.

90 Preventive Legislation in Forensic Medicine. Clark Bell.
91 Medical Treatment and Management of an Attack of Appendicitis—with a Review of Some of the Literrture of the Subject Both Old and New. Boyd Cornick.

New York State Journal of Medicine, New York.

September.

92 Adenoids. Importance of Early Recognition and Removal in Children. Stephen W. Wells.
93 Acute Gastro-enteric Intoxication of Infants. G. F. Rice.
94 Some Diseases Demanding Prompt and Accurate Diagnosis. Allen A. Jones.
95 Some Encouragement in the Treatment of Malignant Growths. Benjamin W. Stearns.
96 Eczema. Homer Genung.

Vermont Medical Monthly, Burlington.

July 25.

97 Why is the Profession of Killing More Generally Honored Than That of Saving Life? Henry James.
98 Tuberculosis Dependent on Toxemic States. T. D. Crothers.

Medical Examiner and Practitioner, New York.

September.

99 *Influence of Heredity on the Expectancy of Life. H. R. Frank.
100 *The Influence of the Plan on the Acceptance of Risks for a Life Insurance Company. Percy C. H. Papps.
101 *Expectancy of Life in Morbid Conditions of the Cardio-vascular System. Robert J. Dwyer.
102 *Expectancy of Life in Morbid Conditions of the Respiratory System. Edwin Ryan.
103 *The Nervous System in Relation to Life Assurance. H. C. Scadding.
104 *Life Insurance. James Thorburn.
105 *Expectancy of Life in Morbid Conditions of the Genito-urinary System. F. Le M. Grasett.

99.—*See abstract in THE JOURNAL of August 20, title 129, p. 573.

100.—*Ibid., title 135, p. 573.

101.—*Ibid., title 131, p. 573.

102.—*Ibid., title 132, p. 573.

103.—*Ibid., title 133, p. 573.

104.—*Ibid., title 134, p. 573.

105.—*Ibid., title 130, p. 573.

Atlanta Journal-Record of Medicine.

September.

106 Enterocolitis, Cholera Infantum, Dysentery and Painful Dentition. E. Van Goldtsnoven.
107 Simple Method of Home Modification of Milk and Its Application in Infant Feeding. Louis C. Rouglin.
108 The Relationship of Albuminuria to the Life Insurance Company. W. E. Wilmerding.

Memphis Medical Monthly.

September.

109 Some Thoughts on Needed Medical Legislation in Tennessee. Wm. Krauss.
110 Ulcer of Rectum. D. A. Walker.
111 The Diagnostic Significance of a Chill. B. F. Turner.
112 Effusion Following Pneumonia. J. D. Hopper.
113 Interstitial Hemorrhagic Cyst of the Stomach Wall—Traumatic. F. D. Smythe.
114 Typhoid Fever. Robert M. Sterrett.
115 A Few Jottings from the Swamps of South Arkansas. W. S. Robinson.
116 Abnormal Development of Genitals. Report of a Case. W. L. May.
117 Purulent Tympano-mastoiditis as a Sequel to Influenza. W. R. Haynie.

Alabama Medical Journal, Birmingham.

August.

118 Treatment of Puerperal Septicemia. Joseph T. Coulbourne.
119 Cancer of the Lip. U. J. W. Peters.
120 Perforation in Typhoid Fever. T. A. Casey.
121 Regarding the Widal Test. James S. McLester.
122 Fake Advertising in Religious Journals. E. H. Sholl.
123 Case of Spleno medullary Leukemia. W. W. Harper.

Mobile Medical and Surgical Journal.

August.

124 Typho-malarial Fever. W. F. Betts.
125 "Psychic Impressions as a Therapeutic Agent." Stephen C. Henderson.
126 Hyoscin. W. McLean Pitts.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

September 17.

1 Discussion on the Prophylaxis of Malaria. Drs. Stephens, James, Ross, McLeod, Manson and others.

2 *Discussion on the Leishman-Donovan Body. Drs. Leishman, Donovan, Manson, Bruce, Hutchinson and others.
3 Supplementary Notes on the Tsetse Fly. E. E. Austen.
4 *A New Trematode of Man. H. F. Conyngham.
5 A New Trematode. John Catto.
6 The Fungus of Tinea Imbricata. P. W. Bassett-Smith.
7 The Congo Floor Maggot. J. E. Dutton, J. L. Todd and C. Christy.
8 *Leprosy a Curable Disease. T. J. Tonkin.
9 Climatic Bubo from Which an Organism Was Cultivated. James Cantlie.
10 Antivenin in Snake Bites. Leonard Rogers.
11 Infectious Jaundice. F. M. Sandwith.

2.—See abstract in THE JOURNAL of September 3, p. 690.

4. **A New Trematode.**—The amphistoma Watsoni, isolated from the small intestine of a negro who had died of starvation and diarrhea, is described by Conyngham as being pear-shaped, flattened ventrally and slightly indented posteriorly, at the margin of the posterior sucker, and of a dark slate color. The anterior sucker is retracted and lies at the bottom of a sulcus, which is terminal and ventral; the posterior sucker being subterminal and ventral. The genital pore lies about a quarter of the length of the parasite from the anterior end, and is rather prominent. The cuticle of the body is marked with transverse ridges, these being coarser and better defined on the ventral surface; the latter is flattened, surrounded by an elevated ridge and bulges posteriorly. The worms measure 8 mm. long, 5 mm. at the point of greatest breadth, this tapering gently anteriorly to 2.5 mm.; their greatest thickness is about 4 mm.

8. **Leprosy.**—Tonkin supports the proposition that leprosy is a disease not only markedly amenable in many of its grades to intelligent direction, but one from which, both with and without treatment, recovery may take place. He believes that leprosy is a disease that often yields to the influence of improved circumstances, whether that improvement be the result of wise supervision in an institution or a fortunate course of events outside. He urges the importance of the recognition by the profession as well as by the laity of the curability of the disease, as in this way only can the authorities be made to adopt such measures as will tend toward a cure of the disease.

The Lancet, London.

September 17.

12 *The Surgical Treatment of Acute Intestinal Obstruction. Arthur E. Barker.
13 Some Remarks on Twenty-three Cases of Pyosalpinx. E. S. Bishop.
14 The Red-light Treatment of Smallpox. (Supplementary paper.) T. F. Ricketts and J. B. Byles.
15 Inspection of the Antrum of Highmore. J. Brown Kelly.
16 The Visual Fields in Tobacco Amblyopia. N. Bishop Harman.
17 Cancer Facts and Cancer Fallacies. Herbert Snow.
18 Case of Spontaneous Gangrene of the Skin in a Hysterical Female. W. A. Mearns.
19 *Case of Bullet Wound of the Brain. Wm. Sheen.
20 Case of Congenital Word Blindness. Sydney Stephenson.
21 Ten Cases of Epithelioma of the Tongue in Women. Charles R. Keyser.
22 *The Plate Cultivation of Anaërobic Bacteria. H. S. Fremlin.

12. **Intestinal Obstruction.**—Barker calls attention to the fact that too much stress has been hitherto laid on the mere removal of the mechanical stoppage and not enough on the evacuation of the putrid material which is killing the patient. The older method of emptying the bowel by colotomy is unsatisfactory as the bowel is in a state of paresis or complete paralysis and expels its contents very slowly, so that until it is cleaned out the cause of the paralysis remains in great part. The best course in many of these cases, probably in all, that are still within the reach of any operative procedure, is to resect the tract of paralyzed and distended bowel at once. This does not apply to recent cases where the bowel is not seriously damaged by the retained feces and is manifestly sound at and above the seat of obstruction. Barker does not establish drainage in most cases, but closes the abdomen at once unless there be general peritonitis, having a great belief in the power of the peritoneum to take care of itself. The after-treatment is of extreme importance. Patients should in all instances sit up in bed from the first as much as possible, and only lie down for sleep, so as to overcome the tendency to hypostatic pneumonia. They should begin at once to take a mixture of 10 grains of carbonate of bismuth three times daily, which he believes to be the best intestinal antiseptic. Albumin water, with 1 dram of brandy, should be given from the first, by mouth, in small quantities, and nutrient enemata and instillation under the skin of normal saline solution or 5 per cent. solution of glucose is recommended as a routine procedure. Half a liter morning and evening may be given, if necessary. It is not well to check a diarrhea, as this material must be evacuated before the patient is safe. Bismuth cleanses the gut and so arrests the diarrhea. Cold sponging and warm drinks will take care of the possible temperature. If the fever is due to pulmonary emboli or pylephlebitis, the general strength should be sustained by the use of the usual stimulants.

19. **Bullet Wound of the Brain.**—In the case related by Sheen the bullet was located by the *x*-ray, without which, says the author, surgery is helpless. The skiagrams in this case were taken laterally and antero-posteriorly, and localization was performed by the double impression on the single plate and the MacKenzie-Davidson cross-thread localizer. In the diagnosis, stereoscopic views are of great help, giving in the matter of relations and direction confirmation of other methods of localization. Stereoscopic views of foreign bodies lying deep in the cranial cavity do not, however, give a very clear idea of the exact depth, owing to the absence of intervening landmarks. From the stereoscopic plates a "plastographic" view was made, one print in green being superimposed on the other in crimson, to be viewed through green and crimson glasses. This is the first time the method has been applied to *x*-ray work, and the author suggests that there may be a future for it as a means of illustrating stereoscopically *x*-ray photographs in medical journals.

22. **Anaerobic Plate Cultures.**—To carry out the process required for the establishment of anaërobic conditions in plates, Fremlin's method of procedure is as follows:

> The rim of the chamber is well vaselined, the plates are placed in the stand, and a small test tube of ordinary sugar bouillon or other reducing fluid, colored with a drop of saturated alcoholic solution of methylene blue, is placed in the support provided for it. Eight grams of pyrogallic acid are first introduced into the chamber, followed by 80 c.c. of a 10 per cent. solution of caustic potash. The stand carrying the plates and tube is now lowered into the chamber by the handles and the lid is carefully put on. The whole apparatus can then be incubated. The process of the absorption of oxygen from the chamber and its contents by means of the alkaline pyrogallol solution can be noted by observing the change in color of the methylene blue indicator; as anaërobiosis is established the color entirely disappears. If the color does not disappear it is evident that there is a fault either in the apparatus or technic, and this must be found and remedied. It must be remembered that the absorption of oxygen within the chamber causes a considerable tendency to leakage of air inwards which must be prevented by careful attention to the seal. Bacteriologically the results obtained in this large chamber are quite satisfactory and bacillus tetani can be readily grown in it.

Indian Medical Gazette, Calcutta.

August.

23 *Case of Malignant Dermoid Cyst of the Neck. D. M. Moir.
24 *Carbolic Acid Treatment of Plague. Mir Hidayatullah.

23. **Malignant Dermoid Cyst.**—Moir gives the history of a patient with a large tumor covering the whole of the right side and front of the neck, and overlapping the chest to the level of the second rib. The tumor resembled an inoperable sarcoma, but on palpation a distinct thrill was felt. The tumor mass was removed by excision, and on microscopic examination of the tissue the tumor was found to be a tubulodermoid with cystic degeneration, taking its origin in a persistent branchial cleft the epithelium of which had undergone carcinomatous change. All the evidence in the case showed that the cyst was not the result of the softening of a metastatic deposit in the cervical glands, secondary tube, and epithelomatous growth in the mouth or nasopharynx, but was due to the distension of a tubulodermoid resulting from the imperfect closure of one of the branchial clefts, probably the third, epithelium of which had undergone the carcinomatous change.

24. **Carbolic Acid Treatment of Plague.**—The author has had considerable experience with carbolic acid in the treatment of plague, and when given in large doses in the commencement of the disease it has proved very useful. The acid was given in 12-grain doses every second hour to adults and in smaller doses

to children. It was given dissolved in water and sweetened with syrup and sandalwood, colored with a little tincture of cardamon. He gave it well diluted and advised his patients to drink large amounts of diuretic, cooling drinks, especially the water of watermelon and ordinary melon seeds ground in a mortar and mixed with water. Cardiac tonics such as digitalis, strychnin and rum were given, when necessary, as in the old or weak. In favorable cases the temperature fell several degrees within forty-eight hours, and within five days of the commencement of the treatment, the temperature was normal. Of 18 cases treated in this way, 12 were cured, and 6 died; 17 were bubonic cases and 1 was septicemic. Of those who died 5 were bubonic and 1 septicemic. In only 2 of the 18 cases was carbolic acid poisoning discovered, but this promptly disappeared on reducing the dose. The author concludes that septicemic cases are not influenced much by the use of carbolic acid.

Journal of Laryngology, Rhinology and Otology, London.

September.

25 President's Address. Urban Pritchard.
26 *Some Observations on the Mode of Origin of Nasal Polypi. Eugene S. Yonge.

26. **Origin of Nasal Polypi.**—A careful microscopic study was made by Yonge of the nasal mucous membrane with a view to determining the changes that take place during polypus formation, from the inception of the process to its completion. He submits the results obtained, from which he draws the following conclusions: 1. In the majority of instances, mucous polypi are probably consequent on and certainly coincident with inflammation of the mucous membrane of the nasal cavity. (2) The primary mechanical process is a localized edema of the inflamed mucous membrane, which edema, on account of certain structural peculiarities of the lining membrane, does not, in the great majority of cases, develop in any intranasal area, but that of a portion of the middle turbinal and of the middle meatal region. Analogous structural peculiarities are present in the mucous membrane of some of the accessory sinuses. (3) The determining cause of the edema in the regions specified is the degeneration and cystic dilatation of the mucous glands. (4) The particular shape which polypi usually assume, their number, probably the appearances of recurrences in some instances, and other special peculiarities of these growths are due to the edematous mucous membrane being thrown into folds and to the normal folds becoming edematous. Certain of the folds quickly increase in size by the absorption of serous fluid and favored by gravity, and finally present the appearance of ordinary mucous polypi. (5) The "polypoid" outgrowths which take origin on the inferior turbinal and more rarely on the septum, generally differ markedly in microscopic structure from mucous polypi, and although they claim a common inflammatory origin, these conditions are distinct, principally on account of the dissimilar structure of the nasal regions from which they respectively take origin. Yonge is arranging to conduct some experiments with a view of producing mucous polypi artificially in animals, on the basis of the causative influence of glandular changes.

Semaine Médicale, Paris.

27 (XXIV, No. 35.) Le traitement chirurgical du chancre mou (of soft chancre). Carle (Lyons).
28 Malarial Infection from Mosquitoes in a Ship on the Open Sea. G. Reynaud. Abstract.
29 Acute Edema of the Lungs as Epileptic Equivalent. U. Alessi. Abstract.
30 (No. 36.) *De la talalgie et de son traitement chirurgical. E. Vincent.
31 Asthmatogenic Action of Dust from Certain Lime and Clay Soils. Molle. Abstract.
32 Temperature of Nursling in Relation to Menstruation of Mother. Weill. Abstract.
33 Bacteriology and Pathogenesis of Infectious, Disseminated Gangrene of the Skin in Children. Auché. Abstract.
34 Two Cases of Ossification of the Crystalline Lens. E. Aubineau. Abstract.
35 Experimental Study of Gouty Deposits. J. J. van Loghem. Abstract.
36 Acute Cholecystitis. G. Senni. Abstract.

30. **Talalgia and Its Surgical Treatment.**—Vincent remarks that the talalgia may be caused by a hygroma of the serous bursa or by an ossifying process with hyperostosis most marked at the points of attachment of the muscles and tendons, but the most common form is that not accompanied by any deforming process. Whatever the lesion, it is always accompanied by a neuritis of either central or peripheral origin, as the primal disturbance is always due to the action of some toxin. Generally the toxin is secreted by the gonococcus, but other agents can sometimes be incriminated. The action of the toxin in question is restricted to the region of the heel. In one case it induces the formation of a hygroma, in another an ossifying process, in another the bone and tendon tissue is affected, but the nerves of the region suffer in every contingency, with the neuritis as the result. Treatment to be effectual must remove the cause, that is, clear out the toxins, when order will be restored at once. Medical treatment should be given a trial first, rest, revulsion along the spine, hydrotherapy, local massage and dry hot air. If this fails or gives but transient relief, an incision about 6 cm. long down to the bone, under local anesthesia, will allow all the proliferating tissue to be scraped out and the serous bursa ablated, no matter whether it appears diseased or not. The fibrous tissue should be scraped and abrased. This procedure facilitates the absorption of the toxins and may possibly destroy the nerve filaments which are suffering from the neuritis. The result has always been a complete cure in his experience, even of the most rebellious, long-established cases.

Centralblatt f. d. Grenzgebiete, Jena.

Last indexed page 158.

37 (VII, No. 9.) *Rectal Feeding. F. Reach.—Ueber Rectalernährung. (Commenced in No. 8.) Critical review of the literature.
38 *Appendicitis und weibliches Genitale (female genitals). R. Pollak. (Commenced in No. 5.) Critical review of the literature.
39 (No. 11.) *Ueber Hari (Akupunktur) und Kju (Moxenbehandlung) in Japan (revulsion and puncturing). E. Okada.
40 (No. 13.) *Heart Defects and Pregnancy. R. Pollak.—Herzfehler und Schwangerschaft. (Commenced in No. 10.) Critical review of the literature.
41 (No. 14.) *Die Bedeutung der Leukocytose für die Diagnose intraabdomineller Eiterungen (suppurations). R. Türkel. Critical review of the literature.
42 (No. 15.) *Irritable Bladder. M. Hirsch.—Die reizbare Blase. Critical review of the literature. (Commenced in No. 13.)
43 *Das mal Perforant. C. Adrian. (Commenced in No. 9.)

37. **Rectal Feeding.**—From his review of 128 articles on the subject of feeding by the rectum, Reach thinks we can safely count on the carbohydrates being absorbed by the rectum in considerable amounts and utilized by the organism, although the absorption is not complete. Fats are not taken up well in nutrient enemata, but their absorption can be promoted by addition of pancreas, which has also a favoring action on absorption of albumin. The opinions of various authors in regard to absorption of albumin vary widely. Individual conditions have much to do with it. The use of predigested albumin does not seem to offer any advantage, especially as such substances easily irritate the intestine. Casein and milk are not adapted for rectal feeding; Reach's personal experience has corroborated the general views in this respect. In regard to absorption of egg albumin, experiences have differed. It is certain that it is not absorbed in many cases, and defibrinated blood not much better. There is no reason for preferring the albumins to the carbohydrates; the arguments are all on the other side. In cases in which the nutrient enemas are merely supplementary to ordinary feeding, the carbohydrates are much superior. Dextrin deserves particular attention in this respect. The slight stimulating action exerted by the carbohydrates can be increased by the mode of using them and by addition of opium. At best, however, rectal feeding is unable even approximately to supply the requisite amount of energy even for debilitated bedridden patients. Reach concludes with the indications for rectal feeding and the technic. He remarks that the physician very often deceives himself when he thinks that he is making a "high" injection.

38. **Appendicitis and Female Genitalia.**—Pollak concludes from his study of 300 recent articles by writers of various nationalities, that the German operators are becoming converted to the principles of the American and French surgeons in regard to the advisability of prompt operating in appendicitis. The various views in regard to the connection between the genitalia and appendicitis and the modes of treatment are discussed in detail.

39. **Revulsion and Acupuncture in Japan.**—Okada's communication was presented at the Austrian Congress of Neurology last May. It was accompanied by specimens and views of the measures described. The "kju" is a kind of fibrous vegetable substance which is sold in the shape of small cylinders about 5 mm. long and 1.5 to 4 mm. thick. One is placed on the skin, slightly moistened to make it adhere, and it is then lighted. It burns or, rather, glimmers slowly, and exerts a mild thermal irritation on the skin. When it is desired to have the irritation stronger the cylinder is applied several times to one spot and an irritating salve is rubbed in. It is sometimes applied with pressure. The fibrous substance is compressed into a sausage-like roll about 18 cm. long, very compact and hard. A few layers of paper are placed on the skin and the "kju" is lighted and applied, pressing it down into the paper. As it can not get air, it burns very slowly and merely scorches without burning the paper, causing an agreeable sensation of warmth and pressure at the spot. The "kju" was known and used fully 1,350 years ago, but was then forgotten for a thousand years. It is a favorite remedy for neuralgias, headache, etc., and although practiced now only by charlatans or by physicians of the old Chinese school, yet to this day it is in use in families from the lowest to the highest. The instrument used for acupuncture is a long, fine gold or silver needle, scarcely thicker than a hair, 4 to 6.5 cm. in length, mounted in a metal handle, and with a protecting guide outside. It is inserted up to the hilt, and the procedure is scarcely at all painful. The points where this acupuncture is allowable are carefully defined. Okada thinks that the points have been empirically determined by the track of an aching nerve, as they follow the nerve in some instances and in others not. The extremities are the favorite points, and it is assumed that acupuncture of certain fingers or toes has a distant action in curing certain affections such as eye troubles, toothache, etc. Okada has had the "kju" applied to his own person several times. Once or twice it was done as a tonic measure, and a few times as a punishment for some boyish prank. He does not attempt to estimate the therapeutic value of these procedures, as he has had so little experience with them. He regards them as harmless and beneficial to a certain extent. He has witnessed violent colic subside under the influence of a few applications of the acupuncture, but does not venture to say how large a share suggestion may have had in the result.

40. **Heart Defects and Pregnancy.**—Pollak draws no special conclusions from the 245 articles which he summarily reviews, but his article presents a good picture of the views and practices of the leading clinicians of the day on this subject.

41. **Leucocytosis in Intra-Abdominal Suppurations.**—Turkel discusses the question as to the diagnostic import of leucocytosis in these cases, citing the views of nearly seventy authors on the subject, with their clinical experience in regard to the blood findings. In conclusion he emphasizes the four points which must never be forgotten in diagnosticating by this measure: 1, exclusion of concurrent causes for the leucocytosis; 2, repeated determination of the number of leucocytes; 3, large numbers of leucocytes (20,000 to 25,000), with indications of involvement of the peritoneum, and finally, that negative findings should never be cited as evidence.

42. **Irritable Bladder.**—Hirsch draws the clinical picture of irritable bladder from his own clinical experience and study of 124 articles. He regards it as a well-defined symptom-complex whose clinical basis is an objectively evident hyperesthesia of the bladder mucosa. It may occur with or without pathologic findings. The latter is the nervous variety, the other is accompanied by simple, non-inflammatory hyperemia. They differ slightly in their manifestations and materially in their etiology and therapeutic indications. Irritable bladder entails in time a number of consequences which usually render the affection irreparable. Even without these, it is a very obstinate trouble, owing to the vicious circle which becomes established between the urinary impulses and the hyperemia of the mucosa. Treatment is generally very slightly effectual, as is evident from the large number of measures proposed for the affection. It has been called by various names, but that of irritable bladder or hyperesthesia vesicæ is by far the most suitable.

43. **Mal Perforans.**—Not much has been written on the subject of mal perforans that has escaped Adrian's vigilant search, as is shown by his bibliography of 445 titles. He reviews the various articles cited and discusses the always grave prognosis and the treatment. The latter should be mainly prophylactic in persons predisposed by tabes, diabetes, etc. Their footgear should be carefully adapted to avoid pressure on the site elected by mal perforans. Cleanliness and rest in bed are the chief factors in treatment and the lesion may heal in time. Instances are on record in which a complete cure followed absolute rest in bed for a month. Caustics should generally be avoided. The outcome of treatment generally depends on the underlying affection. Cures have been reported from the constant and induced electric current, and from galvanism and faradism, or their combination. Thyroid substance has been tried without avail, as also elastic compression. Mercurial treatment has been successful in certain cases, but not in others. Surgical treatment fails when an affection of the spinal cord is the fundamental trouble. Cases due to arteriosclerosis usually indicate amputation, as gangrene is almost sure to develop sooner or later. Treatment is most promising in the cases due to peripheral paralysis following traumatism. The longer the interval since the injury and the larger the space between the stumps of the severed nerve, the less certain the results, although in one case on record the severed nerve was sutured a year after mal perforans had developed. The ulcer healed soon after the nerve had been reunited. Chipault's method of treating mal perforans by stretching the tibialis or its branches after excision of the ulcer has been tried in 79 cases, with immediate success in all but 10. Of the few cases followed for more than a year 3 are known to have been completely cured for two years, 6 for three, 4 for four, 2 for five, and 1 for six years. This permanence of the result of this "elongation trophique," as Chipault calls it, certainly warrants further trials. Delagénière prefers to expose the nerve for a considerable extent and dissociate its fibers, separating the nerve into its elements and destroying all the vessels which accompany the nerve, in order to thoroughly modify the previous conditions. He cured by this means a bilateral mal perforans in a man of 27. He calls it "hersage," that is, the harrowing of the nerve, borrowing an agricultural term.

Deutsches Archiv f. klinische Medizin, Leipsic.

Last indexed page 361.

44 (LXXX, Nos. 3-4.) Sebum in Health and in Cutaneous Affections. P. Linser (Breslau).—Ueber den Hauttalg beim Gesunden und bei einigen Hauterkrankungen.

45 *Ueber Urin und Urin-Sedimente bei normalen Personen, bei rheumatischen Erkrankungen und nach der Einwirkungen von Salicyl-Präparaten. C. Klieneberger and R. Oxenius.

46 *Ueber die Haut-Temperatur des gesunden Menschen (skin temperature in health). J. Oehler (Tübingen).

47 *Die Typhus-Bewegung auf der med. Klinik in Kiel von 1885-1902, nebst Bemerkungen über die Abkühlung durch Wasserkissen (cooling with water cushion in typhoid). W. Pfeiffer.

48 *Ueber Pseudo-Aszites als Folge-Zustand chronischer Enteritis. L. Tobler (Heidelberg).

49 Ueber die Viskosität des menschlichen Blutes bei Schwitz-Prozeduren (blood during sweating). F. Lommel (Jena).

50 Ueber die Adipositas dolorosa. Schwenkenbecher (Tübingen).

51 Ueber natürliche und künstliche erzeugte Leukotoxine. H. A. Christian (Boston).

52 Coagulation-Checking Action of Cobra Venom. P. Morawitz (Tübingen).—Ueber die gerinnungshemmende Wirkung des Kobragiftes.

53 *Urotropin bei Scharlach zur Verhütung von Nephritis (prophylaxis in scarlet fever). Buttersack (Heilbronn).

54 Portal Thrombosis and Changes in Liver. F. Steinhaus (Dortmund).—Ein seltener Fall von Pfortaderthrombose mit hemorrhagischer Infarzierung und Nekrotisierung der Leber (zugleich ein Beitrag zu den Veränderung der Leber nach Pfortaderthrombose).

55 Ueber Herkunft und Wirkungsweise der Hemagglutinine. K. Sick (Tübingen).

45. **The Urine in Health, in Rheumatic Affections and After Salicylic Medication.**—The research reported from Frankfurt shows that normal persons exhibit traces of albumin in the urine to a proportion of fully 58 per cent. of all normal subjects. The normal urine is also liable to contain particles cast off by the kidneys, the same findings as are encountered in afebrile rheumatic affections. In the febrile cases the find-

ings are the same only in more pronounced degree. The febrile rheumatic affections induce a toxic "nephritis" which manifests itself clinically by an increase in the formed elements, especially of the granulated tube casts. This "nephritis" heals under the salicylates. The latter also are liable to induce a characteristic "nephritis," which, however, heals under their continued administration. The findings in 10 out of 93 normal subjects examined are tabulated, as also 5 out of 13 cases of afebrile rheumatic affections, and 5 out of 53 febrile rheumatic cases. The most interesting tables are those of 3 typical examples out of 66 cases under salicylate treatment. Fully 1,200 separate examinations were made, with an average of 17 to 19 or more in each case.

46. **Cutaneous Temperature in Health.**—Among the points learned in the research reported by Oehler is the fact that the temperature of the skin grows less when food is withheld. When food is being taken the skin and rectal temperature run a parallel course, although the external temperature has more influence naturally on the former.

47. **Cold-Water Bed in Treatment of Typhoid.**—This article reviews the experiences at Kiel with 513 cases of typhoid. It is the practice at Quincke's clinic, whenever it is deemed inadvisable to move the patient for the Brand baths, to spread an empty rubber water-bed between the mattress and the sheet. It is then pumped full of water, using about 50 quarts for adults and 33 for a child, at a temperature of 50 to 64 F. It is refilled once to three times a day. The patient's temperature is not so abruptly lowered by this water-bed as when a cold bath or pack is used, but the reduction is much more permanent. It is particularly useful in case of intestinal hemorrhage, heart weakness, peritonitis, thrombosis or whenever muscular exertion from any cause is to be avoided. It also tends to prevent bedsores. Its place is to supplement, not substitute, other hydriatic measures. In case of somnolence or when it is necessary to stimulate the circulation the cold bath is preferable. The water-bed is especially useful when the nursing personnel is limited. It is a rubber bag about a yard long by three quarters of a yard wide or a trifle larger. It is filled by siphon action from a vessel standing about four feet from the floor. Out of the total 513 cases discussed, 360 were treated with cold water and 157 by the water-bed, but only 72 by the latter alone. In 85 cases baths and packs were used in combination with it. A rectal temperature of 39.5 C. (103 F.), is the signal for cold water in some form.

48. **Pseudo-Ascites as Consequence of Chronic Enteritis.**—See editorial, page 816.

53. **Urotropin to Prevent Nephritis in Scarlet Fever.**—Buttersack's indorsement of the prophylactic use of urotropin has attracted much attention (see THE JOURNAL, xli, page 1309). In the dosage he advocates .05 to .5 gm. three times a day—there need be no fear of disturbances, even in case of recent nephritis. When it is not given as a preventive during the entire course of the disease it should be administered at the first trace of albumin in the urine. He explains its action as due to the liberation of nascent formaldehyd in the glomeruli and tubules, neutralizing the scarlatinal toxins or destroying the bacteria exactly at the points where the morbid process starts. His experience was limited to 10 cases, but he relates the details of 3 in which the typical scarlet fever followed soon after diphtheria or rheumatic endocarditis, with an evident predisposition to trouble on the part of the kidneys. There was not a trace of nephritis in a single one of the 10 children treated with the urotropin or some similar preparation.

Münchener medicinische Wochenschrift.

56 (LI, No. 33.) *Desinfektion der Gallenwege und innere Antisepsis. F. Kuhn (Carlsruhe).
57 *Serum Treatment of Articular Rheumatism. Menzer (Halle).—Die Ergebnisse der Serumbehandlung des akuten und chronischen Gelenkrheumatismus.
58 Heart Weakness and Morphin. O. Rosenbach.—Herzschwäche und Morphium Injektion.
59 Ueber spezifische Beeinflussung der diastatischen Ferment im Blutserum bei Zufuhr verschiedener Kohlehydrate. M. Ascoli and A. Bonfanti.
60 Ueber Digalen (digitoxinum solubile). M. Cloetta.
61 Hysterical Stuttering. L. Merzbacher.—Kasuistische Beiträge zur hysterischen Artikulationstörung, speziell des hysterischen Stotterns.
62 *Zur Pathogenese der Polyneuritis. S. Auerbach.
63 Disseminated Fat Tissue Necrosis of Abdominal Cavity with Pancreas Intact. Haffner.—Ausgedehnte disseminirte Fettgewebsnekrose der Bauchhöhle ohne Erkrankung des Pankreas.
64 Ueber das Endotheliom der Nasenhöhle (of nasal fossa). F. Röpke.
65 Simplified Tamponing for Cavities. Prölss.—Eine Vereinfachung der Tamponade.
66 Ohne oder mit "Rapid-Tamponator" (with or without). R. Putz (Meran).

56. **Effective Internal Disinfection of the Biliary Passages.**—Kuhn has been applying in the clinic the results of his experimental research in this line. As he has previously reported, thymol, menthol and the salicylates are the only drugs out of a long list tested which displayed any efficacy in this respect without serious by-effects. Salicylic acid passes into the bile in large amounts and even in a comparatively weak concentration checks the fermentation of the bile. All the numerous tests resulted positively, and justify the assumption that the salicylates can be used for effectual disinfection of the biliary passages. Exhibition of the salicylates, therefore, in cases of cholangitis and cholecystitis is to be commended to the general practitioner. Further tests of a combination of two or more of the above mentioned drugs seemed to demonstrate a still more effectual action. He found that the gas-producing power of the bile derived from a biliary fistula was very much reduced when the subject was under the influence of the salicylates alone or combined with menthol or thymol. Bile from a biliary fistula exhibits progressive fermentation, but when the subject has been taking the above drugs the fermentation is much less intense and subsides much earlier. The effect of the drugs is not perceptible until after they have been duly absorbed and it lasts for some time after they have been suspended. The best internal medication in case of inflammation in the biliary passages is, consequently, salicylic acid and its salts. Kuhn lauds his method of determining the gaseous products as an accurate test of the decomposition of a fluid. He regards it as a physiologic-chemical test, more delicate than chemical analysis. It would be difficult by the latter alone to recover the salicylic acid in the bile, while its fermentation-inhibiting action is unmistakably apparent even with minimal amounts present. He adds a trifle of sugar, infects with a little intestinal content, and sets the vessel in the incubator at 37 C., examining it at four-hour intervals to note the production of gas. The results of the various experimental and clinical tests are tabulated, the findings all emphasizing that in salicylic medication we have a powerful weapon at our command for controlling inflammatory processes in the biliary passages. Among the subjects with biliary fistulæ treated with the salicylates was one whose bile displayed a gas-forming power as follows: After addition of 1 per cent. sugar and infection with a little fecal material and incubation at 37 C., the amounts of gas in the fermentation tubes at the fourth, twelfth, twenty-fourth, thirty-sixth and forty-eighth hours were respectively 1, 3, 5, 8 and 10 cm. These same figures were found at every repetition of the test. On the other hand, after sodium salicylate had been given the patient in 1 gm. doses every four hours, the amount of gas that formed was only .2, .3, .8, 1 and 2.5 cm. at the corresponding hours. Aspirin displayed nearly as much efficacy in the same dosage, the amount of gas being .8, 1.5, 2, 3, and 3.5 cm. at the corresponding hours.

57. **Success of Serum Treatment of Articular Rheumatism.**—THE JOURNAL has previously described Menzer's successful application of an antistreptococcus serum in the treatment of articular rheumatism. Two years of experience have confirmed its efficiency for both acute and chronic articular rheumatism. It transforms the latter into a curable form, it seems to provide much better chances for recovery from endocarditis, and further seems to protect against recurrences better than any other means known to date. He groups his results in tabulated form. They include 29 acute and 22 chronic cases, with 3 in which the treatment was first applied in a recurrence, and 2 of chorea. He found that the appetite was always good under the serum treatment, and the general health did not suffer as under drug medication.

62. **Pathogenesis of Polyneuritis.**—In the case reported the multiple neuritis observed was ascribed to the subject's occupation, with an alcoholic predisposition. He had been a busy waiter in large hotels or restaurants for years, and the neuritis affected his legs and the muscles used in carrying and balancing his load of dishes.

Therapie der Gegenwart, Berlin.

67 (XLV, No. 9.) *Humidity of Air as Factor in Heat. F. Frankenhäuser.—Die Luftfeuchtigkeit als Wärmefaktor.
68 *Ueber Entfettungs-Kuren (reduction of obesity). K. Bornstein (Leipsic).
69 *Ueber den Einfluss des Curare bei Tetanus. P. Bergell and F. Levy.
70 *Ueber die Wirkung der Radium-Emanation auf bösartige Tumoren (cancers). A. Braunstein (Moscow).
71 Zur Behandlung des Plattfusses (flat foot). A. Sachs.
72 New Remedies and Measures for Biliary Lithiasis. G. Klemperer.—Ueber neue Mittel gegen die Gallensteinkrankheit.

67. **Humidity of the Air as a Factor in Heat.**—Frankenhäuser thinks that in order to apply Dalton's law to the human body we must modify it to read that the rapidity of evaporation from the surface of the body is proportional to the difference between the molecular pressure of the vapor escaping from its surface and the molecular pressure of the moisture already in the air. He has been studying the question at the Hydrotherapeutic Institute of the University of Berlin, and emphasizes the importance of this law for practical hydrotherapeutics. He estimates the pressure of the vapor from the lungs as approximately 43 mm.; of the naked, wet body at 48 mm., and of the lightly clothed body as 9.5 mm. at 15 C.; 14.7 mm. at 20 C., and 23.6 mm. at 25 C. The results obtained from various hydriatic measures vary as the humidity of the air of the room allows free evaporation from the surface of the body or not. When the evaporation is too rapid the subject is liable to be chilly, the vitality depressed, and he "catches cold" on coming out. When the temperature of the bathroom is 22.3 C. and the humidity 69, the pressure of the moisture in the air is equivalent to 13.6 mm. The actual heat in such a room, according to Dalton's formula, would be 22.2 plus twice 13.6. This is equal to 49.4 C. (121 F.). With a temperature of 28 C. and pressure of 27 mm. the actual heat of the room is 28 plus twice 27, equal to 82 C. (180 F.), In the steam room of a "Russian" bath, with a temperature of 46 C. and pressure of 75.16 mm., no evaporation from the body can take place; there is actual condensation on its surface and thus heat is added to it. The actual heat of such a room is equal to 196.4 C. On the other hand, a "Roman" bathroom with a temperature of 80 C. and 3 mm. pressure, has an actual heat of only 80 plus twice 3, equal to 86 C.

68. **Reduction of Obesity.**—Bornstein's principles of treatment of obesity include an abundant supply of albumin, as this imparts vigor to the cells. It is not necessary to give it in the form of meat. He allows a certain amount of fats, too, as they tend to reduce the appetite for other foods. He also allows soups and beverages, regarding the former as pre-eminently adapted to satisfy hunger by filling the stomach while supplying very little nutrient material. The patients should under-eat, but not go thirsty. They should satisfy their hunger with vegetables, soups, etc., and build up on albumin and exercise. They come out of the course with considerably more albumin in their tissues, although their obesity is reduced and they have not been hampered by the annoying restrictions of the usual anti-fat diet.

69. **Influence of Curare in Tetanus.**—After much experimental research, which is described in detail, as carried on at von Leyden's clinic, curare was used in the treatment of 3 clinical cases of tetanus. The results are a confirmation of the favorable experiences of Vella and Hoffmann in an early day. Modern scientific methods have enabled these experiences to be repeated on a large scale, avoiding the rocks on which the early experimenters were shipwrecked. Claude Bernard first proclaimed the importance of curare in tetanus, and the present research has confirmed his view that it is the most important and most valuable symptomatic means at our disposal for the treatment of tetanus. The curare was used in the form of curaril, a preparation made in Berlin, which is durable, constant and pure, capable of very exact dosage and free from cumulative action. The tetanic convulsions of animals can be temporarily arrested, or at least allayed, and the course of the disease rendered much milder under the influence of curaril. In the clinic the curaril arrested the severe tetanic convulsions in one case for two hours, without displaying the slightest by-effect. In another, milder case, the convulsions were permanently controlled with the drug and the patient recovered. The curaril does not cure the tetanus, but it seems to effectually control and arrest the tetanic spasms, and is thus able to tide the patient past the stage of danger from suffocation by spasm of the muscles of respiration. It does not combat the fever nor heart weakness. Serum treatment is still indicated as before. The antitoxin binds the poison circulating in the blood, while the curaril controls the threatening symptoms caused by the poison that has already entered into combination with the cells. Morphin and chloral are still indicated also as sedative and narcotic, but the abolition of the spasms is the most important indication and this apparently can be accomplished with the curaril.

70. **Action of Radium Emanations on Malignant Tumors.**—Braunstein announces that he has benefited a number of cases of cancer by injection of a radioactive water or ingestion of radioactive bismuth. He produces the radioactive water by dissolving .1 to .2 gm. radium chlorid in water, distilling it in a Würzburg jar with a Liebig apparatus. The distillate is a radioactive fluid which he calls aqua beta, and uses for local injection into accessible tumors. For treatment of cancer in the stomach or esophagus he produces a radioactive powder by placing radium bromid, in substance or in solution, in a jar with some bismuth and leaving them in contact three to five days. The radioactive powder thus obtained he calls bismuth beta. It is applied topically or by ingestion. In these two forms the radium emanations have a marked and direct therapeutic action on the malignant growth, while they do not entail ulcerations. As the radium is capable of giving off these emanations indefinitely, it can be used over and over again. The radioactive bismuth lodges at the narrow part of the esophagus in case of a cancerous growth, and exerts its specific action exactly at the point where it is needed. Injection of the radioactive water into the tumor is followed by the destruction of the cancer cells without injury to the skin or surrounding tissues or ulceration of the surface of the cancer. The action of the emanations seems to be that the cancer cells are primarily and directly devitalized and are then absorbed. None of his patients is cured, as he instituted the treatment only last January, but the results in many of them are so encouraging that he considers it a duty to urge others to try this simple method of treatment. One of his patients was a man of 54 with carcinoma of the cardia. He had become rapidly emaciated and was unable to take any solid food. He drank 3 gm. of the bismuth beta in water, six times in seventeen days, with the result that he was able to swallow better and his weight remained stationary. In the other cases of cancer of the esophagus the ability to swallow solid food was partially restored and the patients felt much better in every instance.

Wiener klinische Rundschau, Vienna.

Last indexed page 765.

73 (XVIII, No. 32.) *Die Diagnose der Hematurie. W. Hirt (Commenced in No. 31.)
74 (No. 33.) Klinisches zur Fistula auris congenita. A. Bing.
75 A. E. Vogl. Ein Lebensbild. (Commenced in No. 28.)
76 (No. 34.) *Klinischer Beitrag zur Hemisphären-Atrophie. M. Infeld. (Commenced in No. 32.)
77 Die Reform des Irrenwesens (of care of the insane). H. Schlöss.
78 (No. 35.) *Ueber hereditäre, infantile Tabes. R. Kaufmann.
79 *Zur Behandlung von Katarrhen der Luftwege und der Lungen mit Arzneidämpfen (medicated vapors). M. Saenger (Madgeburg) (Commenced in No. 34.)
80 Zur Verwendung des Suprarenins und Adrenalins bei Blutungen (in hemorrhage). B. Müller.

73. **Hematuria.**—Hirt reviews the various causes of hematuria and describes a number of cases to illustrate the difficulty of differential diagnosis in many instances. When the patient is seen during the course of a renal hemorrhage it can readily be traced to the kidney in most cases, but some may require exploratory incision of the kidney. Hematuria

proceeding from the bladder or prostate can generally be diagnosed with ease. The discovery of the bacilli is the only decisive evidence of tuberculosis. In one case the bladder was ruptured during extirpation of an ovarian cyst, but the rupture was not discovered at the time. A few drops of bloody urine were noticed soon after, although the general condition was excellent. The bladder was filled with a warm solution of boric acid as a diagnostic measure. The patient collapsed in a few minutes and died in less than half an hour. In another case an elderly man suffered from hematuria, with nothing to account for it except considerable arteriosclerosis. Before the patient could be examined with the cystoscope he died suddenly. The necropsy revealed cerebral apoplexy and numerous small arteriosclerotic aneurisms in both kidneys, the other organs comparatively sound. Another patient suddenly presented hematuria, without pain and with no other symptoms, no history of gout. Two weeks later dull pains were noted in the left side, and the left kidney was found enlarged, the urine from this kidney blood-stained. A small protuberance was seen at the mouth of the left ureter, suggesting tuberculosis, but no bacilli were found in the urine. The diagnosis wavered between tumor and tuberculosis, when a small concrement was evacuated with intense pains, and the hematuria ceased at once.

76. **Atrophy of One Hemisphere.**—Two cases are described and illustrated to show the difference between atrophy of a hemisphere due to disease, and caput obstipum due to intrauterine pressure on the skull. Persons in the first category are generally victims of epilepsy, or are mentally deficient, while persons in the second category are comparatively normal.

78. **Case of Juvenile Tabes.**—The lad of 10 was the son of a tabetic father and healthy mother. At the age of 6 he developed incontinence of urine, and at 9 gastric crises. Kaufmann thinks that a hereditary tendency to tabes must frequently occur, but is overlooked when the patients are not seen until adult age. He concludes with the remark that we know certain important predisposing causes for tabes, but that the direct cause for it is as much a mystery as ever.

79. **Inhalation Treatment of Catarrh of the Air Passages.**—Saenger has been using for three years an apparatus which allows the vaporization of substances too insoluble to be used as a spray. He gives views of the simple apparatus and describes its workings, affirming that medication by means of fumes or gases deserves much more attention than it has yet received. The scantiness of the results obtained by this form of therapeutics to date has been due to the imperfectness of the apparatus used. With improved technic the results in his hands have been remarkably fine. He uses menthol, Peruvian balsam, turpentine, eucalyptus, cypress and other oils, with dimenthylformal, the latter consisting of two molecules of menthol to one of formaldehyd. He reviews his experiences in detail.

Gazzetta degli Ospedali, Milan.

Last indexed page 1017.

81 (XXV, No. 73.) Per l'analisi dell' acido glicuronica e degli succheri. A. Ferrannini.
82 Caso di pericardite acuta reumatica. G. Berghinz.
83 Caso di pseudo-leucemia linfatica con decorso clinico particolare. E. Chilesotti.
84 (No. 76.) A proposito di nefrolisine. C. Tarchetti.
85 Contributo allo studio dei disturbi di secrezione dello stomaco; 2 casi di acloridria. G. Curlo.
86 La cura d'uva (grape cure). F. Melocchi.
87 Polinevrite e paralisi di Landry in seguito ad influenza. E. Bracchi.
88 (No. 79.) Su di un caso di tabe dorsale spasmodica (malattia di Erb Charcot). C. A. Crispotti.
89 Sul reattivo du Schoenbein-Almen per la ricerca del sangue (of the blood). A. Ghelfi.
90 Acidita urinaria in rapporto all' eta, costituzione individuale e alla tubercolosi. A. Campani.
91 Sulla febbre apiretica. L. Masciangioli.
92 *La cura medica dei fibro-miomi uterini. L. Carini.
93 (No. 82.) Sulla genesi dei calcoli salivari. G. dal Fabbro.
94 Della presenza del bacillo di Eberth nelle urine dei tifosi. G. Corsini.
95 Sulla diazoreazione. G. Campanella.
96 La soluzione eterea di iodoformio nella otite media purulenta cronica. V. de Cigna.
97 (No. 85.) Su di una rara forma di cardiopatia congenita. O. Cozzolino.
98 Studio delle exostosi. A. Pellegrini and G. Conforti.
99 Anchilostomiasi ed anguillulosi. E. Leornadi.
100 *Le inspirazioni anormali nella diagnosi precoce della tubercolosi polmonare. C. Giulio.
101 (No. 88.) Fra i reattivi dell' incoordinazione dei movimenti. —Fenomeni "dell piede sollevato" e cause che lo influenzano ("raised foot" sign). M. Gay.
102 L' attuale valore dell' inoscopia. B. Bonardi.

92. **Medical Treatment of Uterine Fibromyomata.**—Carini had occasion to treat a woman of 42, who presented an interstitial fibroma with firm and multiple adhesions. The anemic condition and solid adhesions contraindicated extirpation and medical treatment, according to Hildebrandt, was instituted, the ergot being supplemented by fluid extract of hydrastis canadensis, and a tonic containing iron arseniate. The tumors vanished, and the general health recuperated, the patient eats and digests well all kinds of food and considers herself cured.

100. **Inspiration in Diagnosis of Tuberculosis.**—Giulio advises examination of the inspiration in numbers of healthy subjects. This will educate the ear so that slight variations from normal will be readily detected, and the diagnosis of incipient tuberculosis thus be made possible. The best way is to auscult the lung region carefully, point by point, during inspiration, examining first one lung and then the other, at alternate inspirations, the ear over the symmetric points in turn. After careful study of the inspirations alone the expirations can then be examined.

Riforma Medica, Palermo and Naples.

Last indexed page 641.

103 (XX, No. 27.) *La glicosuria alimentare negli epatici (in liver affections). S. De Rossi.
104 *La ricerca del sangue nel contenuto del tubo digerente (occult blood in contents of digestive tract). E. U. Fittipaldi.
105 Etiologia e patogenesi dei cosi detto tumore infiammatorio delle ghiandole salivari. F. Gangitano (Palermo).
106 Serosa-muscular Flaps for Hemostasis in Liver and Spleen. L. Baldassari (Ferrara).—I lembi siero-muscolari nell' emostasi epatica e splenica.
107 Linfocitemia, mielocitemia, pseudoleucemia. F. Schupfer (Baccelli's clinic, Rome). Abstract.
108 Treatment of Habitual Constipation. G. Rummo. Editorial. Twelve formulæ.
109 (No. 28.) Ricerche comparative su alcune proprieta biologiche del bacillo del tifo e del bacterium coli. G. Martinotti (Bologna).
110 Dei bacilli acidi e della loro presenza in alcuni casi nella cute. R. Campana.
111 Sul valore della citodiagnosi dei versamenti cavitarii (of effusions). S. G. Gramegna (Turin).
112 *Morbo di Basedow. E. De Renzi. Abstract.
113 (No. 39.) *Ergografia del riflesso rotuleo. G. Boeri.
114 Nuovo metodo per la colorazione del corpo interno emoglobigeno nei globuli rossi dei vertebrati (new stain for red corpuscles). G. Pighini (Ceni's laboratory, Reggia Emilia).
115 Note su alcuni casi di tumori addominali. Contributo alla semeiotica dei tumori del grande epiploon. U. Benenati (Naples). (Commenced in No. 28.)
116 *Le nuove scoperte del Prof. Otto von Schrön (phthisiogenic micro-organism). C. Galbo.
117 (No. 30.) Tubercolosi sperimentale delle glandole salivari. P. L. Fiorani.
118 La "cura di Gilbert" nelle pleuriti essudativi. M. Landolfi.
119 La nevrastenia spinale sessuale (sexual). Mingazzini. Abstract.

103. **Alimentary Glycosuria in Liver Affections.**—De Rossi of Baccelli's clinic first established on healthy subjects the minimal amount of sugar that would induce glycosuria in health. He then tested a number of persons with some liver trouble, and tabulates the results of 38 tests. Adding these to those reported by Sachs, Strauss and Ferrannini there are now 75 cases of liver affections on record which responded positively to the alimentary test with levulose in all but 5 instances. Saccharose and glucose give very uncertain and contradictory findings, but the levulose glycosuria can be relied on. When levulose is given in doses surpassing 1.9 gm. per kilogram it induces glycosuria even in healthy subjects. The elimination of the levulose commences generally in an hour after its administration, and may continue for two to six hours, but usually lasts only three or four. The amount eliminated is very small, and not dosable in the clinic, requiring the Trommer test. The amount given ranged from 60 to 100 gm. of levulose, equivalent to 1.25 to 1.84 gm. per kilogram of body weight.

104. **Determination of Blood in Contents of Digestive Tract.**—Fittipaldi remarks that all the tests for determination of "occult" blood in the feces and stomach content presuppose that the blood is dissolved, which is not necessarily always the case. It is frequently inclosed in mucus, especially in catarrhal conditions, and this prevents the action of the re-

agents on the blood. He has been using a technic which overcomes this difficulty, while its simplicity, facility and reliability in the most difficult cases render it superior in other respects, as has been demonstrated in three years of experience at De Renzi's clinic. The solid flakes in the stomach content obtained by lavage or in diluted feces are heated with 5 or 6 tablets of caustic potash to each 40 c.c. of fluid, until the mucus is completely dissolved. In case of the presence of blood, a characteristic reddish tint is imparted to the fluid, and a film with greenish reflexions forms on the surface. It is then set aside for five or six hours, when the filtered fluid will show still more characteristic tints, the reddish brown shading into green reflexions. The most characteristic sign, however, is the vanishing of the reddish tint when the filtrate is shaken up, exposed to the air, the oxidation causing the red to change to a brownish yellow. This technic is sufficiently accurate for most cases, but may be supplemented by spectroscopic examination.

112. **Exophthalmic Goiter.**—De Renzi prefers to treat febrile conditions in this affection with antipyrin rather than quinin. Thyroid treatment aggravates instead of improving the symptoms. He advocates absolute repose and isolation, even plugging the ears to keep out sounds.

113. **Ergography of Knee-jerk.**—A number of tracings are given showing the knee-jerk as mechanically elicited by a hammer and pendulum automatic contrivance. The tracings are of three types: high curves at first, gradually declining, the normal type; low at first, then increasing, then declining, the type observed in neurasthenics; and high and continuously high, the exaggerated reflexes of hemiplegia. The character of the tracings indicates that the knee-jerk is in reality a direct response of the quadriceps to sudden excitation of its tendon.

116. **Micro-organism of Pulmonary Phthisis.**—The discovery by von Schrön of the phthisiogenic micro-organism has already been chronicled in THE JOURNAL, page 478. In this description, written by one of his assistants, the announcement of this discovery is styled "one of those great scientific events which cast new and unexpected light on the old arguments." Schrön's lecture on the subject was accompanied by stereoscopic views, but the details of his technic have not yet been published. [De Renzi's *Nuova Rivista Clinico-Terapeutica* contains a letter from von Schrön, dated June 20, in which he states that the most important result of his researches is the demonstration that the caseous masses in the phthisic lung are formed principally by a large microbe, entirely different from the tubercle bacillus. It starts its growth as a delicate thread, straight at first, then tortuous, then ramifying to distinct tree formation, with subsequent enlargement and growth of the side branches until it resembles a lichenoid fungus in its development. When fully developed it grows capsules, somewhat similar to spores. At first these capsules are homogeneous little spheres, staining readily. In time they become granulated, and then pass into a phase in which their contents seem to be nothing but threads, united in bunches in the ripe capsule. These threads differ completely from bacilli, spirilla and vibriones. When they escape from the capsule they invade the epithelial cells of the alveoles in the lungs. A cell thus invaded looks like Medusa's head, as only part of each thread bores into the cell, and the rest projects. The protoplasm of the cell soon becomes entirely consumed, and the nucleus alone persists. The threads grow and assume the arborescent form, with final capsule fruit formation to complete the cycle. The senile forms undergo fatty and mucous degeneration, thus originating the caseous detritus, and the cavity thus formed enlarges by the constant invasion of the tissues by the proliferating microbe. The tubercle bacillus may also find lodgment in the cavity, but the two processes are distinct entities. Schrön believes that the tubercle bacillus is generally the pioneer. Serum treatment of tuberculosis has always failed in phthisic subjects. Success is attainable only when the toxins of the phthisiogenic microbe can be included in the treatment. Drop pure cultures of this microbe have been obtained, and also cultures in symbiosis with the tubercle bacillus, but no pure cultures have yet been secured *in vitro*. —ED.]

Books Received.

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

ESSENTIALS OF CHEMISTRY, ORGANIC AND INORGANIC. Containing Also Questions on Medical Physics, Chemical Philosophy, Medical Processes, Toxicology, etc. By Lawrence Wolff, M.D., Formerly Demonstrator of Chemistry at the Jefferson Medical College, Philadelphia. Sixth Edition, Thoroughly Revised. By A. Ferree Witmer, Ph.G., Formerly Assistant Demonstrator in Physiology at the University of Pennsylvania. Fully Illustrated. Cloth. Pp. 225. Price, $1.00 net. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

A TEXT-BOOK OF HUMAN HISTOLOGY. Including Microscopic Technic. By Drs. A. A. Böhm and M. von Davidoff, of Munich, and G. Carl Huber, M.D., Professor of Histology and Embryology in the University of Michigan, Ann Arbor. Second Edition, Thoroughly Revised and Enlarged. With 376 Original Illustrations. Flexible Cloth. Pp. 525. Price, $3.50 net. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

A TEXT-BOOK OF CLINICAL DIAGNOSIS. By Laboratory Methods. For the Use of Students, Practitioners and Laboratory Workers. By L. Napoleon Boston, A.M., M.D., Associate in Medicine and Director of the Clinical Laboratories of the Medico-Chirurgical College, Philadelphia. With 320 Illustrations, Many of Them in Colors. Cloth. Pp. 547. Price, $4.00. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

PROGRESSIVE MEDICINE, VOL. III, SEPTEMBER, 1904. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Nineteen Illustrations. Pp. 284. Per Annum, in Four Cloth-bound Volumes, $9.00. Philadelphia and New York: Lea Brothers & Co.

BERI-BERI: Its Symptoms and Symptomatic Treatment. An Essay Printed by the Board of Trinity College, Dublin, for the Author. By Percy Netterville Gerrard, B.A., B.Ch., B.A.O., M.D. Dublin University. Cloth. Pp. 95. Price, $1.00. London: J. & A. Churchill. Philadelphia: P. Blakiston's Son & Co. 1904.

BERI-BERI: Its Symptoms and Symptomatic Treatment. Being Extracts from "An Essay on Beri-Beri," Printed by the Board of Trinity College, Dublin, for the Author. By Percy Netterville Gerrard. Cloth. Pp. 45. Price, 50 cents. Philadelphia: P. Blakiston's Son & Co. 1904.

EXAMINATION OF THE URINE. By G. A. de Santos Saxe, M.D., Pathologist to the Columbus Hospital, New York City. Fully Illustrated, Including 8 Colored Plates. Flexible Leather. Pp. 391. Price, $1.50 net. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

TRANSACTIONS OF THE NINTH ANNUAL MEETING OF THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY Held in Lexington, Ky., April 30 and May 1 and 2, 1903. Paper. Pp. 269. New York: Published by the Society. 1903.

HOW TO COOK FOR THE SICK AND CONVALESCENT. Arranged for the Physician, Trained Nurse and Home Use. By Helena V. Sachse. Second Edition, Revised and Enlarged. Cloth. Pp. 297. Price, $1.25. Philadelphia: J. B. Lippincott Co. 1904.

DISCURSO LEIDO EN LA APERTURA ANUAL DE LOS ESTUDIOS de la Pontificia Universidad de Santo Tomas de Manila, Eldia 2 de Julio de 1904. R. D. Fr. Joaquin Recorder g Dorda. Edicion official. Paper. Manila: Colegio de Sto. Tomas. 1904.

CURA E GUARIGIONE DELLA TUBERCOLOSI POLMONARE. Seconda edizione. Paper. Pp. 147. Dott. Carlo Ruata, Prof. di Materia Medica e d'Igiene nell' Universita di Perugia. S. Lapi. 1904.

NEW PATENTS.

Patents of interest to physicians, etc., recently granted:

767686. Hypodermic syringe. Henry J. Detmers, Columbus, Ohio.
767522. Spirometer. Henry T. Lyttleton, Marshall, Texas.
767593. Massage implement. Alvah U. Patchen, Syracuse, N. Y.
767718. Truss. John M. Simmons, Thomasville, Ga.
768561. Antiseptic compound. Alphonso M. Clover, Ann Arbor, Mich.
768562. Forming organic peroxid acids. Alphonzo M. Clover, Ann Arbor, Mich.
768563. Antiseptic compound. Alphonso M. Clover, Ann Arbor, Mich.
768523. Massage implement. Gustave Dittmar, Washington, D. C.
768048. X ray tube stand. George R. Hogan, Chicago.
768133. Door closer and check for operating disinfecting devices. Frank A. Martin, Chicago.
768244. Suppository machine. Francis J. Stokes, Philadelphia.
768721. Electrode for therapeutical purposes. Wm. B. Bassell, Columbus, Ohio.
768861. Catamenial pad. John L. Minges, Rochester, N. Y.
768827. Apparatus for treating disease by light rays. Charles F. Stewart, Chicago.
769451. Surgical pad. Wm. E. Ambrose, Washington, D. C.
769581. Phototherapeutic apparatus. Will F. Arnold, U. S. Navy.
769463. Massage roller. Elmer Blanchard, Cooperville, Mich.
769593. Formaldehyde hydrosulfites and making same. Louis Descamps, Lille, France.
769483. Surgical instrument. Frederick E. Leavitt, St. Paul, Minn.
769420. Illuminant attachment for head-mirrors and laryngoscopes. Alfred F. Watch, Philadelphia.